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On another page we publish the letter of a distinguished mine engineer who had exceptional opportunities for knowing and measuring the great talent of our late eminent American engineer, Mr. Hamilton Smith. It will afford others, as it does us, pleasure to read this testimony to the ability and high character of Mr. Smith, whose name will always stand high on the roll of honor among American engineers.

The organization of new companies and the flotation of industrial stocks, chiefly of iron and coal companies, has been as active an industry in Germany during the past year as in this country, perhaps even more so. Speculation in the new stocks has been very active and they have reached very high prices, carrying with them the stocks of the old-established companies. The natural result has followed, and for a month past there has been a real panic on the Berlin Bourse. The prices of iron and coal shares have fallen rapidly. Many failures of speculators have occurred, and those who have been carrying these stocks have been unable to do anything to check the fall. The German papers ascribe the break-down largely to what they are pleased to call "the collapse in the American iron market"; but it seems to be a very simple case of over-trading and speculation, bringing about an inevitable reaction.

The steam turbine, which attracted much attention here some years ago, when the De Laval type was shown in operation, has been used abroad for some high-speed work with some success, though not, perhaps, with much economy. The Parsons type has been used in some small boats with which a very high speed was attained. Recently it has been applied in England to a torpedo-boat destroyer, the most important work yet attempted with this class of engine. This vessel has reached the extraordinary speed of 37½ knots—43 land miles—an hour, the highest speed ever attained on the water. The vessel is 210 ft. long, 21 ft. beam and 7 ft. draft, and it required 12,000 horse-power to drive her at the highest speed. This is an extraordinary performance, and shows what can be done with that class of engine. It does not follow, however, that it is a desirable type for ordinary work, though it may serve well for some special purposes.

The copper imported into Great Britain for the first half of the current year shows a large increase over 1899. The total given by the Board of Trade returns for the six months included 62,198 long tons of ore, 43,096 tons of matte and precipitate and 37,338 tons of metallic copper; the total being equivalent approximately to 65,106 long tons of fine copper. This shows an increase this year over last of 12,255 tons, or 23.2 per cent. The United States furnished 42.1 per cent. of the metallic copper imported, or 26.9 per cent. of the total calculated in fine copper. Our exports to Great Britain—and indeed to all foreign countries—are chiefly in the form of fine copper, our ores and matte being treated and refined at home. The British refiners this year drew the greater part of the ore they treated from Chile, Spain and the Cape of Good Hope; while the larger part of the matte and precipitate was from Spain. There was, however, a large increase in both ores and matte from countries not separately given in the returns, indicating that some supplies are now drawn from new fields. The consumption and purchases of copper in Great Britain have evidently been on a large scale this year, and the facts shown in this return correspond with those obtained from other sources. Manufacturers last year allowed their stocks to run very low in the hope of forcing a reduction in prices; apparently they have given up this expectation and are now securing supplies.

Judging from the number and nature of the inquiries we receive, a good deal of prospecting is being done for the rare minerals and metals at the present time. Some of this work may result in discoveries of value, but some of it is also, unfortunately, a waste of time and labor. To say nothing of the difficulty of finding and distinguishing the frequently complex ores in which these elements are found, there is a very general misapprehension as to their value. It is true that such metals as tungsten, molybdenum, uranium and a few others—about which inquiries are most frequent—sell at what seem to be high prices; but the uses of these metals are very limited, the quantity required to supply the demand is very small, and in most cases there is no present prospect that the consumption will be increased by enlarging or cheapening the supply. Of course there may be cases where some new discovery may create a large demand, just as the use of thorium oxide in making incandescent mantles for gas burners established a market for monazite, which had before been worthless; but as a rule it is safer to wait until the demand arises before spending too much time in finding the element. The fact that a rare element has a nominally high value in the price lists is no sign that it has any commercial value at all, or that more than an infinitesimally small quantity is ever called for or sold. For these reasons we are often obliged to disappoint correspondents who have formed high estimates of the value of some unfamiliar mineral which they may have discovered.

The silver movement through London showed uncertainty and a considerable falling off last month. The total imports in June were valued at £967,284, which compares with £1,049,489 in 1899; showing a decrease of £82,205, or 5.8 per cent. This decrease was in the receipts from the producing countries, those from the United States diminishing from £872,130 last year to £821,537 this year, while those from Mexico dropped from £88,329 to £52,534, and Australia decreased from £23,964 to £14,511. The imports from the United States were 85 per cent. of the total this year, against 83.7 per cent. last year; showing a small increase in ratio, notwithstanding the decrease in the total amount.

On the export side of the account we find that the trade movement to European countries accounted for nearly all the large decrease shown in the total, which was only £789,283 this year, as compared with £1,502,-297 in June, 1899; a decrease of £713,014, or 47.5 per cent. this year. The larger part of the falling off to Europe was in the shipments to Russia, which were only £1,600 in June, against £598,825 a year ago. The exports to the East were well maintained for the month. The disturbances in China already showed their effect on trade, the silver taken for that country being only £25,000, as compared with £74,318 last year. A decrease may be the rule for several months, though probably to be reversed later. On the other hand shipments to India reached the large total of £651,852, being £33,230 more than a year ago; and there is no doubt that India will continue to be a large taker of the white metal for some time to come.

The account given in another column of the celebration of the fiftieth anniversary of the Cleveland Iron Mining Company marks the conclusion of a half century of development which has never before been paralleled. It is hard to believe that the chief speaker at this commemoration, still an active man, took part in the first exploration of a region which was last year the busiest in the world, and from which 18,400,000 tons of ore were shipped during the year. Mr. White, the speaker referred to, aided in taking out the few hundred tons of ore which, in 1850, were worked in a charcoal forge near by; and he has lived to see over 1,000,000 tons shipped from the property in a year. The celebration was a modest, though appropriate one, and it was well to mark such an anniversary in the history of our mineral industry.

A notable point brought out in the history of this pioneer mining company is the great reduction which has been effected in the cost of putting the ore on the market. Even after its shipments had reached considerable proportions, we find records showing a season average of $4.17 a ton on ore carried to ports on Lake Erie; while last year a number of cargoes were taken at 55 cents, and even at 50 cents a ton. Accompanying this reduction in costs, and in part causing it, has been the development of the carriers from the schooners transporting 200 or 300 tons to the steamers which now take cargoes of 7,000 tons of ore or even more.

A feature of this company's history which deserves especial mention is the fact that it has always been on good terms with its men, and at the anniversary exercises there were a number present who received especial recognition, having been in the company's service for periods ranging from 20 to 40 years. This is an unusual and most commendable record.

THE LEAD MINES OF SOUTHEASTERN MISSOURI.

Attention has been called recently to the lead mines of southeastern Missouri through an attempt of the American Smelting and Refining Company to make an agreement with the lead miners of Colorado, Idaho and Utah to control the price of lead in the United States and the refusal of the Missouri miners to enter into the proposed agreement. Southeastern Missouri is now the only large lead-producing district of the United States, of which the output is not controlled more or less directly by the American Smelting and Refining Company. Whether the lead mining companies of southeastern Missouri are in a stronger position that those of the Coeur d'Alene District of Idaho, is perhaps uncertain. It is certain, however, that the mines of southeastern Missouri can produce lead very cheaply and the companies operating them have been very profitable for a long period of years. The ore bodies are large and easily worked and the companies which control them are probably in a position to produce lead at as low a cost at least as any producers in the far west.

The geology of the southeastern Missouri lead mining district has been described in numerous publications, of which the latest and most authoritative are the report by Arthur Winslow to the Missouri Geological Survey, being Volumes VI. and VII. of the last series of reports by that survey, and a monograph also by Arthur Winslow on "The Disseminated Lead Ores of Southeastern Missouri." There are several centers of mining in the southeastern Missouri District, the most important being in the vicinity of Bonne Terre, where are situated the mines of the St. Joseph Lead Company, and in the vicinity of Flat River, where are the operations of the Desloge Consolidated Lead Company, Doe Run Lead Company, Central Lead Company, Columbia Lead Company, and St. Louis Smelting and Refining Company, besides other companies whose properties have not yet become productive to a considerable extent.

The Bonne Terre and Flat River Districts are situated about 60 miles south of St. Louis and within 40 miles west of the Mississippi River. Further south there are workings at Mine la Motte and near Fredericktown, the Catherine Lead Company being now engaged in developing a mine and erecting works at the latter point; the Catherine Lead Company expects to become a producer by October 15th, 1900. The area in which the lead ore has been discovered is about 35 miles long in a north and south direction and about 12 miles broad from east to west. The surface of the country is hilly, but not mountainous, and is generally covered with timber, principally oak, which is mostly of small size and of little value except for fuel. The ore bodies consist of galena disseminated in limestone, the mineralization occurring in channels of great size, both longitudinally and laterally. They lie nearly flat and are sometimes very near the surface and never very deep. For an account of the geological characteristics of the district reference should be made to the publications previously mentioned.

The deepest shaft in the district is one belonging to the Doe Run Lead Company, which is down 420 feet. The Columbia Lead Company, which is one of the recent undertakings, encountered its ore body at 298 feet. In all the mines the ground is solid and little or no timbering is done. Many of the mines are dry; others have a little water; and some as much as 1,200 to 1,500 gallons per minute. In 1899 both the Doe Run Lead Company and the St. Louis Smelting & Refining Company were temporarily drowned out of certain of their workings.

In general the mining conditions are very favorable. Miners receive from $1.50 to $1.75 per day; common labor is paid $1.25. Wood costs $1.50 to $1.75 per cord. Coal costs 95 cents per ton at East St. Louis, whence the freight rate to Flat River is $1.05, the cost of coal delivered at the mines being $2 to $2.50 per ton. Common lumber costs $15 to $17 per thousand.

The ore is dressed in large and well-equipped mills, in which the practice in ore dressing is as well developed as in any other district in the United States. The large mill of the St. Joseph Lead Company at Bonne Terre was described in detail by Professor H. S. Munroe in the "Transactions of the American Institute of Mining Engineers," Volume XVII., page 659. In the larger mills the cost of dressing is between 20 and 30 cents per ton. In general the ore yields about 7 per cent. of galena concentrate which averages about 66 per cent. lead, although some mills make products assaying as high as 73 per cent.

The concentrated mineral is for the most part smelted by the mining companies which produce it, each of the large mining companies having smelting works near the mines. The plant of the St. Joseph Lead Company, which also smelts the product of the Doe Run Lead Company, is situated, however, at Herculaneum on the Mississippi River, at the terminus of the Mississippi River & Bonne Terre Railroad, which is also controlled by the St. Joseph Lead Company. The entire freight movement of the Bonne Terre and Flat River Districts passes over that railroad which is said to have been a very profitable investment, as no doubt it is. The Desloge Lead Company employs the reverberatory process of smelting; the others smelt with circular water-jacketed furnaces, with a flux of limestone and ironstone, the ore having been previously slag-roasted or sintered in reverberatory furnaces. Coke is used for fuel. The lead tapped from the furnaces is refined by remelting at a low temperature and poling, either by stirring with green wood or by passing steam through the molten metal. The producers who have no furnaces, sell their product to the others. Formerly when the smelting works at St. Louis were in operation a considerable quantity of mineral from southeastern Missouri was smelted at that point. The smelting practice in southeastern Missouri is capable of considerable improvement. The cost of smelting is reckoned generally at about $8 to $10 per ton. Within two or three years, however, the St. Louis Smelting & Refining Company has smelted concentrates at a charge to the miner of $6 per ton and at the same time has paid for 95 per cent. of their lead contents, by wet assay, at the price of pig lead in St. Louis. The freight on pig lead from the Flat River mines to St. Louis is $2.10 per 2,000 pounds. Under the present conditions lead from those mines which are best equipped can be laid down at St. Louis at a cost of about 2¼ cents per pound.

The lead mines of southeastern Missouri are rarely opened ahead to any considerable extent except by diamond drill from the surface, which is very generally practiced. Diamond drilling is, in fact, both the method of the discovery and method of proving the extent of the ore bodies of this district. An ore body having been located, a shaft is sunk and enough driving is done to give sufficient working face to produce the tonnage of ore required by the mill, after which the system consists in simply following the ore without attempting to block out reserves. Consequently, there are few mines in the district which will show any large

reserves beyond the probabilities indicated by the drill. However, the experience of the district is that the latter is a reliable guide.

The largest producers of lead in southeastern Missouri are the St. Joseph and Doe Run companies which are controlled by practically the same persons. After them, but at a large interval are the Desloge, Central, Columbia and Mine la Motte, which are named in the order of their present production. The Columbia is a new producer which began only at the end of 1899. It has dressing works of 250 tons per day capacity. During the current year there will be a new producer, which will probably take rank eventually next to the St. Joseph and Doe Run. This is the St. Louis Smelting & Refining Company, a branch of the National Lead Company, which a few years ago acquired a valuable property near the town of Flat River and since that time has been engaged in its development and the erection of large dressing works. One section of the works, constituting one-fourth of the full capacity, has been put in operation. The works, which are contained in a steel building, are designed to have a capacity of 1,000 tons per day. The National Lead Company has made a very large investment in this field, but has succeeded in opening a large deposit of ore and the undertaking promises to be highly successful.

The total production of pig lead in southeastern Missouri in 1898 was 35,769 tons against 34,255 in 1897. In 1899 the total production was 31,-35[illegible] short tons.

It speaks well for the district that the St. Joseph, Doe Run, Central, Columbia and Desloge Lead Companies and the Mine la Motte, which are the chief producers, are all dividend payers, and for the most part have shown a balance on the right side of the ledger through the lean years as well as the good ones.

NEW PUBLICATIONS.

"Encyclopedia of Mexican Mining Law." By Richard E. Chism. City of Mexico: "El Minero Mexicano." Pages, 202. Price, $2.

This very useful book includes a digest of the Mexican mining code, including all supplementary laws and decrees. It gives also the laws relating to taxation and exportation of the precious metals. The author is a mining engineer of long experience in Mexico, and is thoroughly acquainted with his subject. The book is conveniently arranged, each point being treated separately and the various subjects arranged alphabetically, so that it is possible to find the information needed on any special topic with very little labor. A convenient addition is a glossary of Mexican mining terms, which will be of much assistance to the reader. In view of the number who are interested in Mexico and Mexican mines the book is a very serviceable and timely one, and will doubtless have a large circulation.

"Sullivan's New Hydraulics, Consisting of New Hydraulic Formulas and the Rational Law of Variation of Coefficients." By Marvin E. Sullivan. Denver, Colo.: The "Mining Reporter" Press. Pages, 304. Price, cloth, $3; leather, $4.

The author points out the lack of agreement in the results obtained by using the various hydraulic formulas deduced by different experimenters; and then says that this fault in the formulas is due to the failure of engineers to discover the rational law of the variation of the coefficient. This fault he endeavors to correct by first discussing the present available data, and then deducing new formulas, adapted to the conditions as he sees them. Mr. Sullivan also suggests changes in the methods of measuring discharges over weirs and through orifices; and he has made a long series of experiments on the law of resistance in nozzles and convergent pipes, such as are employed in hydraulic mining. His new formulas seem to be carefully worked out and discussed; but engineers will doubtless differ much as to their use. The appendices give considerable practical information, chiefly compiled from the experiments and experiences of other engineers. They relate to the cost of work, dimensions of pipe, methods of work, and general water-works data.

We regret to note that the typographical work is poor, and the frequent obvious errors, in head-lines and elsewhere, lead to the uncomfortable suspicion that there may be errors in the formulas also; which would much impair their usefulness to engineers.

BOOKS RECEIVED.

In sending books for notices, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review on another page of the Journal.

"The Gold Measures of Nova Scotia and Deep Mining." By E. R. Faribault. Halifax, N. S.: Published by the Mining Society of Nova Scotia. Pages, 40; with map.

"Mercury or Quicksilver in New South Wales." By J. E. Carne. Being No. 7 of the "Mineral Resources" series. Sydney, N. S. W.: Government Printer. Pages, 36; with maps.

"The Mineral Industry of Bosnia-Herzegovina." By Franz Poech, Chief of the Department of Mines, Vienna, Austria; published by the Administration of Mines. Pages, 56; with map and illustrations.

"Tariffs of Foreign Countries. Volume XVI, Part III. Asia, Africa, Australia and Polynesia." Prepared by the Bureau of Foreign Commerce, Department of State. Washington; Government Printing Office. Pages, 648.

"A Guide to the Principal Kalgoorlie Mines: With a Chapter on the General Position and Future Prospects." By J. W. Broomhead. London, England: Striker Brothers, Limited. Pages, 30. Price (in New York), 20 cents.

"Economic Minerals of Canada." By G. M. Dawson, Director of the Geological Survey of Canada. Ottawa, Canada: Printed by direction of the Canadian Commission for the Paris Exposition. Pamphlet, pages 56; with map.

"Commercial Relations of the United States with Foreign Countries during the Year 1899. Volume II. Europe." Prepared by the Bureau of Foreign Commerce, Department of State. Washington; Government Printing Office. Pages, 940.

"Comparison Between Physical Tests and Chemical Analyses of Portland and Rosendale Cements." A Report to the Commissioners of Accounts of the City of New York by Otto H. Klein and S. F. Peckham. New York: Published for the City. Pages, 28; with tables.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials will only be published when so requested.

Letters should be addressed to the MANAGING EDITOR.

We do not hold ourselves responsible for the opinions expressed by correspondents.

The Fallis Manometer.

Sir: I have read with interest the article on the Fallis manometer contained in your issue of June 30th last. It is an interesting modification of an old instrument invented many years ago by Dr. Wollaston, another modification of which was described by the late Mr. J. J. Atkinson in the "Transactions" of the North of England Institute of Mining and Mechanical Engineers, Volume III, page 168, and Plate I. A somewhat similar instrument is regularly sold by makers of philosophical instruments in this country, and known as the Koenig water-gauge, a description of which appears in the "Transactions" of the Institution of Mining Engineers, Volume III, page 452.

Yours faithfully, M. Walton Brown.

Newcastle-upon-Tyne, England, July 10th, 1900.

Tiff and Heavy Spar in Zinc Ores.

Sir: In your issue of July 14th there is an article by Mr. W. George Waring of Joplin entitled "The Purchase of Zinc Ores in the Joplin District." He brings up an interesting point, i. e., the effect that tiff and heavy spar have on the loss of zinc in smelting on account of the sulphur that remains as sulphates of these alkaline earths after calcination of the "jack."

Authorities seem to be divided on the subject. Schnabel's "Hand Book of Metallurgy," Volume II, page 9, says: "Zinc sulphide, heated with carbon and lime, produces metallic zinc, calcium sulphide being formed, although the decomposition is incomplete and is said by Berthier to depend on the temperature." Also on page 36, speaking of the calcination of blende and the formation of calcium sulphate and subsequent reduction to calcium sulphide in the retorts, "sulphides of the alkaline earths appear to give up half of their sulphur to zinc in the presence of free zinc and carbon."

In experiments made by the writer at a large zinc smelter in the West it was proven to him:

First.—A well-known theory that in pure calcined blende 1 per cent. of sulphur, combined with the zinc, retains 2 per cent. of that metal in reduction.

Second.—That either lime or iron oxide will in smelting react on an imperfectly roasted blende in the presence of carbon and liberate metallic zinc from its sulphide.

No experiments were made as to the effect of sulphate of lime in reduction. It is hardly possible, in view of the reaction of lime on sulphide of zinc, that sulphate of lime could react as stated in Mr. Waring's article.

John E. Williams.

Carnegie, Pa., July 19th, 1900.

Telluride Ores and the Treatment of Them.

Sir: A recent circular issued by the Great Boulder Main Reef Company, operating the mine of the same name at Kalgoorlie, in Western Australia, draws attention to the problem which is agitating the minds of the shareholders of certain West Australian companies. One hears of processes and rumors of processes, the general tendency being, apparently, to obscure the unsatisfactory condition of some of the big mines at Kalgoorlie by attributing it to defects in the metallurgical treatment of the ores. Amid a good deal of noise and smoke comes a clear report that the managers of the Great Boulder Main Reef have solved the problem. The success of these gentlemen, Messrs. Skewes and Marriner, both of whom I have the pleasure of knowing, is set forth in the circular referred to. The statements made are rendered somewhat turbid by the amateur character of the description, which is given through one of the directors, but the outlines of the method are these: First, roasting, in a shaft furnace, then pan-amalgamation, and finally, the cyanidation of the residues in large filter-presses.

The difficulty of treatment presented by the unoxidized ores of Kalgoorlie is primarily due to the presence of coarse crystalline native gold, that is to say, the gold occurs in two distinct and diverse conditions, as native metal and also combined with tellurium, as a telluride. It used to be the practice to send the tailings from the cyanide vats over amalgamated plates, but this did not arrest all the escaping gold. Nor is it to be wondered at. In the course of roasting the tellurides the TeO_2, which is liberated, combines readily with ferric oxide, forming a definite product, the tellurite of iron. This is apt to coat the particles of native gold disseminated through the ore and thereby render them refractory to amalgamation. This difficulty is largely overcome at the Great Boulder Main Reef mill by subjecting the roasted ore to grinding in pans. The attrition clears the surface of the gold and renders it amalgamable. The subsequent cyanidation of the pulp extracts the finer particles derived from the decomposition (by roasting) of the tellurides, and so secures that percentage of the precious metal

which would elude amalgamation. The extraction is quoted, on small lots, at 96 per cent., on ores, and 93 to 98 per cent., on old tailings. The costs are given as 19 shillings, or $4.75 per ton. Returns and costs from larger lots of ore will be needed to confirm these figures. The results of experimental work are often rendered misleading by an imperfect sampling of either the ore or the residues. In giving costs, general expenses and fixed charges should not be omitted.

This development of metallurgical practice is of considerable interest. Here in Colorado we have no "sulphide problem," nor are we bothered very much by the process-mongers. The improvement of existing methods goes on steadily, it is a slow evolution rather than a variation "per saltum." Cyanidation hardly keeps pace with chlorination, at least as regards the telluride ores of Cripple Creek. The former process appears to be more sensitive to slight changes in the composition of the ore. It does the best work, comparatively, on the lower grade ores. Barrel chlorination has continued to progress in efficiency. The extraction is high and constant, and while no marked changes have taken place in chemical methods, the mechanical ingenuity displayed in mill construction has tended, year by year, to cheapen the treatment. The use of concentrators, shaking tables of the Wilfley type, more especially, is a recent departure of considerable interest, more particularly in connection with the work at Kalgoorlie which has been referred to. It has been found profitable to pass the tailings from the chlorination mill over concentrators in order to extract particles of gold, which may exist in such a form as to have escaped solution by the chlorine water. The concentrates, which form about half of 1 per cent. of the weight of material treated, are sold to the lead smelters at Pueblo or Denver.

T. A. Rickard.

Denver, Colo., July 18, 1900.

Hamilton Smith.

Sir: As a friend who knew him well I would like to add my own account of his life and work to what has been already given in the "Engineering and Mining Journal."

Hamilton Smith, the distinguished and well-known engineer and mining man, was born near Louisville, Ky., in 1840. At that time his father, Hamilton Smith, Sr., was a distinguished lawyer in Louisville, Ky., who had left his native town, Durham, N. H., where his family had been known and honored for over a century, to make his home in the West. He became interested in 1850 in the establishment of a cotton factory and the development of extensive coal mines in Indiana, on the Ohio River, and was the founder and sustainer of the flourishing little town of Cannelton, the seat of the factory and coal mines. He was a man of great scholarly tastes and attainments and intimately acquainted with the leading men of the West, but, although a college man himself, he had different ideas for his son's education. The keynote of this education he decided should be self-development, so, after sending his son to the good village school in Durham from the age of 6 to 13, he brought the boy back to Cannelton. There, a large and well-selected library was left open to him under his father's guidance, and practical work was combined in the shape of initiation into the engineering and accountant's departments of the mines. Here he speedily acquired distinction, for his thirst for knowledge was genuine, his brain strong, quick and clear, and his industry untiring. He showed great aptitude for mathematics, uncommon facility in calculation and quick and accurate memory of facts. At an early age he was recognized as the chief in the engineering and accountant's departments of the Cannelton Coal Mines.

When he left Cannelton in 1870 for the Pacific Coast, where a more extended arena presented itself, he was noted for his wonderful general information as well as for mastery of all the work and pursuits he had undertaken; in fact he was recognized universally as a very able and remarkable man in his own town and State. His first work on the Pacific Coast was in connection with the Triunfo Mines in Lower California, where he was engineer and manager. His chief work, however, was in connection with hydraulic gold mining at the North Bloomfield Gravel and Milton Mines in Nevada County, California, where he planned and executed probably the greatest works of this description in the world, and was recognized as the highest authority on all matters relative to hydraulic mining in the State of California. In addition to hydraulic mining he studied and reported on various other mines on the Pacific Coast, and in mine surveying did some remarkably accurate work at the New Almaden Quicksilver Mines.

He was also instrumental in bringing about the cheap manufacture of high explosives on the Pacific Coast and fought the exclusive patents, being largely instrumental in the establishment of the Vulcan Powder Works. He was a prominent figure in the legal fight between the miners and the farmers relative to the debris from the hydraulic mines. After doing all in his power for mining interests, when injunctions were placed upon hydraulic mining, he went to New York, carefully studied the new water supply scheme for the city, and made a serious and most intelligent bid for this work, backed by strong financial support. About the same time he commenced the writing of his noted book entitled "Hydraulics," which by scientific men is considered an exceptionally able work.

In 1861 he made, for Messrs. Rothschild, his first report on El Callao Mine, Venezuela, with which he was afterward connected as consulting engineer, and initiated its successful management under Mr. H. C. Perkins.

He established himself as a mining engineer in London in 1886 and went into partnership with the late Mr. de Crano. In 1886 he married in London Mrs. Charles Cosgreve, who was a Miss Jennings of New Orleans, La. In 1886, in conjunction with his then partner, Mr. de Crano, he founded what is now known as the Exploration Company, Limited. Created with the small capital of £20,000, the operations of this company, of which Hamilton Smith was the managing director, became so extensive that in 1889 the capital was increased to £300,000, and again in 1896 to £1,250,000.

As manager of the Exploration Company, Hamilton Smith took an active interest in gold mining in South Africa, and was instrumental in the formation of the Consolidated Deep Levels and the Transvaal and General Association, Limited. In the interests of the Exploration and its allied companies he made two visits to South Africa, in 1892 and in 1895, and was one of the first to endorse the theory that the deep levels of the outcrop mines could be successfully operated. During these visits he obtained a remarkable insight into the possibilities of the Rand gold-fields and contributed an able article on the subject to the "Times" of January 17th, 1893.

He was largely instrumental in the promotion and flotation of the Central London Railway Company, and identified himself very closely with that enterprise during its construction. He also introduced the Alaska Treadwell, Alaska United and Alaska Mexican Gold Mining companies upon the London market, and it was upon his report that a large interest in the Anaconda Copper Mining Company was acquired and subsequently placed upon the London market.

At the time of his death he was actively engaged in the development of the Mariposa Grant in California, which, owing to litigation, had lain idle for upward of 20 years. By tactful negotiations, Hamilton Smith succeeded in quieting this litigation and secured a controlling interest in the Mariposa Grant for himself and friends.

After the death of Mr. de Crano, in 1896, he went into partnership with Mr. H. C. Perkins, who had been his intimate friend and business associate since 1873-1874; in fact from the time that Mr. Perkins was secretary to the North Bloomfield Gravel Mining Company. Mr. Perkins had also figured most prominently with him in the organization and management of the North Bloomfield Gravel Mining Company and the Milton Mining and Water Company in California, El Callao Mine in Venezuela, the Alaska Treadwell Mine in Douglas Island, Alaska, and other enterprises. Since 1896 Messrs. Smith and Perkins have taken up their residence in the United States, having their office in New York. At the present time it is sad to note that this loyal friend and associate will hear of his death in far-distant Korea.

Hamilton Smith was a distinguished member of the American Institute Mining Engineers, American Society Civil Engineers and the Institution of Civil Engineers, London.

This is a brief outline of the career of a man whose individuality impressed itself most forcibly on all with whom he came in contact. His was a big nature, made on great lines—both mind and heart were capacious. His will, masterfulness and confidence in himself were great, but were tolerated and effective, as they were unaccompanied by petty vanity, meanness or mock humility. He was not a mere self-seeker, but divided both profit and praise with those with whom he was associated, helping many a struggling man on the road to success. He was a broad-gauge man, who sought truth and aimed at the heart of his subject, brushing away trifles. In his death the world has lost a great engineer, an able worker and an organizer of industrial enterprises.

To those who knew him well, and to whom he gave his confidence, he was not only the object of proud admiration for a most honorable and successful career, but the man whose great generous heart won their deepest affection. His irreparable loss to his wife, family and friends is widely and truly mourned.

B.

London, July 10th, 1900.

BLAST FURNACES IN GREAT BRITAIN.—The number of blast furnaces in blast on June 30th last in Great Britain was 410, this being an increase of 6 on the returns of the previous quarter. On the other hand, the total number of furnaces built is 602, this being 3 less than at the last return. A large number of furnaces are, however, now being built or rebuilt.

NEW ZEALAND COAL.—The dearness and scarcity of Welsh steam coal has induced the British Admiralty to make an extended use of New Zealand combustible. Coal obtained from the west coast of the Middle Island of New Zealand has high evaporative power, and is comparatively smokeless. The Lords of the Admiralty have accordingly decided to buy Westport No. 2 coal for a year on the Australasian and China stations. The steamer "Penarth," of Cardiff, has been chartered to convey a first cargo of 4,000 tons from New Zealand to Hong Kong for the use of the vessels stationed there. The "Penarth" will arrive out in New Zealand about the middle of August.

A COAL WASHING PLANT IN BELGIUM.—In the new screening floor, washing plant and briquette works capable of turning out 30 tons per hour, lately started at the Monceau-Fontaine Colliery, in the Charleroi mine inspection district of Belgium, the dust from shaft No. 4 is tipped into a plate-iron bin, whence it is raised by a bucket-chain to one compartment in a mixing tower; and dust from the other pits is delivered at the foot of a second chain, which takes it up to a second compartment of the tower. At the top of each compartment is a sliding valve for regulating the proportion of the different sizes that constitute the desired mixture, which is received at ground level in a bin, whence it is raised by a third bucket-chain to two jigging screens, by which it is divided into (1) dust up to 1½ mm., raised directly to a tower that can store 150 tons; (2) grains up to 6 mm. (¼ in.) which are led to a Francou washer and (3) grains of 6 mm. to 10 mm., and of 10 mm. to 15 mm., treated separately in Allard washers, whence they are taken up to draining towers. After draining for 24 hours, all the washed products are delivered by conveyers to a "transporteur-collecteur," which takes them up to a tower above the briquette works. The pitch, broken into large pieces, is shovelled into the hopper of a grinder, whence it is taken by an elevator to a second tower, where it is mixed mechanically in determined proportion with the coal from the neighboring tower, the mixture being led by another elevator to a second grinder. The ground mixture is distributed to two steam-heated pug mills, which form a homogeneous paste that is conveyed to two distributors, where the paste becomes consistent through the influence of an active air-current from a Farcot fan. The paste is distributed to two double presses, the stream of which is separated into briquettes which are delivered mechanically onto two travelling belts for facilitating their being loaded by hand on railway wagons.

JASPER RAYMOND RAND.

Jasper Raymond Rand was born September 17th, 1837, in Westfield, Mass., of a family dating its American ancestry from 1635 and including two colonial governors; and which was well represented in the Revolutionary War. He obtained his education in the public schools and academy of his native town and in Fairfax, Vt. His earliest business connection was with his father, who was a manufacturer of whips when Westfield was the headquarters of that industry. In 1865 his father retired from business, and Mr. Rand and his younger brother, Mr. Addison C. Rand, succeeded him.

In 1870 he removed to New York and was for a time associated with with another brother, Mr. Albert T. Rand, president of the Laflin & Rand Powder Company. In 1872 Mr. Addison C. Rand began the manufacture of the Rand rock drills and other mining machinery, and the two brothers subsequently organized the Rand Drill Company, with A. C. Rand as president and J. R. Rand as treasurer. They continued to hold these positions until the death of Mr. A. C. Rand in March last, which left the chief office vacant, when Mr. J. R. Rand was elected to the position. From small beginnings this business has developed into an important industry. When the Messrs. Rand became interested in rock drills they were in the pioneer stage, with at most a small and uncertain future before them, but they have come to be an essential part of every mining outfit. Rock drills were among the first American machinery products to find recognition among foreign engineers, and they are to-day at work in nearly every country on the globe, where the mining industry has passed beyond the most primitive stage.

In 1873 Mr. Rand removed his residence to Montclair, N. J.,where he had ever been prominent in local affairs. For three years he served

JASPER RAYMOND RAND.

on the Town Council; was for two years a chosen freeholder of Essex County; a charter member and first president of the Montclair Club, serving also another term; for 15 years he was a trustee of the Congregational Church. He was one of the organizers of the Bank of Montclair, of which he was continuously the president. He was a member of the New England Society, the Hardware Club and the Engineers' Club of New York City; and for 40 years a member of the Mt. Moriah Masonic Lodge of Westfield, Mass.

He was practically acquainted with every field of business life from that of traveling salesman up. He had a remarkable fund of wit and of pointed but stingless repartee, which made him the most delightful of companions, and this naturally brought him friends without limit. These and his other personal qualities also made him a presiding officer under whose gavel it was a delight to sit. He was interested in all public enterprises and contributed generously to their support.

He leaves a widow, a daughter and a son, the latter now representing the Rand Drill Company in Paris.

RUBBER COATING SHAFTS.—The London "Engineer" says: "Recently we described the German system of protecting large shafts by vulcanizing india-rubber onto the shaft. A large shaft was covered in this way last week in Newcastle-on-Tyne, and it seems probable that the use of the system will extend rapidly in Great Britain."

COAL EXPORTS OF GREAT BRITAIN.—For the six months ending June 30th the coal exports from Great Britain reached a total of 22,063,206 long tons, an increase of 1,072,576 tons over last year, and of 5,345,413 tons over 1898. The average value given for coal this year was $3.81 per ton, against $2.47 in 1899, and $2.27 in 1898. The quantity of coal shipped for the use of steamers engaged in the foreign trade during the six months was 5,782,485 tons, as against 5,959,552 tons in the first half of 1899, and 5,411,220 tons in the first half of 1898.

A NOTABLE LAKE SUPERIOR ANNIVERSARY.

We have already referred briefly to the celebration by the Cleveland-Cliffs Iron Company at Ishpeming, Mich., of the 50th anniversary of the organization of the Cleveland Iron Company. The exercises were held near the site of the original open-pit mine, which was marked by a flag. The employees of the company were given a holiday with full pay and with their families gathered at 10 a. m. to hear the historical address of Hon. Peter White. A number of the officers and directors of the company who had gone by boat from Cleveland were present and participated in the exercises. Mr. White gave a most interesting account of the hardships encountered by the pioneers who went to the Lake Superior country in 1849 and 1850 and did the first work toward the opening of the mines, which are still in operation. He was a member of the first party, and for many years was actively engaged at the mines.

An impressive feature of Mr. White's address was his reference to the Chippewa Chief, Charley Kaw-Baw-Gam, who was among the first to greet him when as a young man he landed at Marquette in 1850. At this reference the old chief, now 101 years old according to the best estimates, rose from his seat on the platform and bowed to the audience.

The Cleveland Company has always been on good terms with its employees and has retained many of them in its service for long periods. At the anniversary the presentation by President Mather of handsome gold medals to those of the employees of the company who had been in its service over 20 years was an interesting event. Fifty-seven men, one of whom had been an employee for 40 years, were remembered in this way. The medals bore on one side the diamond figure which has been used for years by the company as an emblem, and over it two hammers crossed. On the face was an inscription indicating that the medal was presented to the owner on the semi-centennial of the company, in recognition of a service of more than 20 years.

A list of the men who received these badges is worthy to be put on record. The names are as follows:

Lake and Hard-ore Mines.—Frank Zoberlin, 1854-1855, 40 years, worked up to March, 1895; Thos. Coughlin, 1864, 36 years, night watchman, started 1862, but quit and came back in 1864; John Scott, 1865, 35 years, L. A. drainage; Mike Ready, 1867, 33 years, foreman blacksmith; A. P. Peterson, 1867, 33 years, engineer, Lake mine; John Seaborg, 1867, 33 years, foreman machine shop; Isaac Moss, 1869, 31 years, engineer, Hard Ore No. 4; A. P. Wahlstrom, 1869, 31 years, surface work and track man; Terrence Doherty, 1869, 31 years, surface work; Dennis Coughlin, 1873, 27 years, choreman; John Endahl, 1874, 26 years, surface boss, Hard Ore; Jas. Murphy, 1874, 26 years, supply clerk; Jos. Martin, 1874, 26 years, shift boss, Imperial; John Stevens, 1875, 25 years, surface boss, Lake; Chas. Fosberg, 1878, 22 years, fireman; John Clevin, 1879, 21 years, carpenter; Tim Harrington, 1879, 21 years, dry man; Abe Cox, 1879, 21 years, pumpman; John Lemin, 1879, 21 years, miner; Dan Oie, 1880, 20 years, surface, Lake; And. Nelson, 1880, 20 years, blacksmith, Lake; Peter Bloken, 1880, 20 years, carpenter; Ole Valline, 1880, 20 years, pipeman; Alf. Collick, 1880, 20 years, mining captain, Lake; W. G. Mather, 1879.

Salisbury Mine.—Chris Hanson, 1872, 28 years, teamster; Walter Vicary, 1874, 26 years, head machinist; W. M. Sterling, 1880, 20 years, clerk.

Barnum and Cliffs Shaft.—John Tobin, 1867, 33 years, top lander; Patrick Kennedy, 1869, 31 years, cage tender; Chas. Warnberg, 1869, 31 years, miner; Wm. Cooney, 1870, 30 years, pocketman; M. Harrington, 1871, 29 years, miner; Jas. Byrnes, 1871, 29 years, sorting ore; John Beal, 1872, 28 years, mechanic; Thos. Butler, 1872, 28 years, surface laborer; John Barry, 1872, 28 years, top lander. Mat Ryan, 1872, 28 years, miner. Tim Dwyer, 1872, 28 years, cage tender; Garrett Graham, 1873, 27 years, miner; Otto Warnberg, 1873, 27 years, shift boss; Samuel Parks, 1873, 27 years, dry man; Thos. Ryan, 1874, 26 years, miner; Aug. F. Beerling, 1875, 25 years, cage tender; Frank Johnson, 1876, 24 years, pocketman; John Anderson, 1876, 24 years, pumpman; Chas. Renberg, 1876, 24 years, miner; Gust Lyman, 1878, 22 years, miner; John Bloomgreen, 1879, 21 years, miner; John Langas, 1880, 20 years, engineer; Chas. Malmgreen, 1880, 20 years, miner; Chas. Warnquist, 1880, 20 years, miner; W. H. Fuller, 1873; Wm. Ryan.

F. P. Mills, Sr., who was for 20 years the agent of the company at Ishpeming, was present as its guest for the day after an absence of 20 years. Capt. Mills is now 74 years old and lives in Indiana. A feature of the programme was the presentation of a gold medal to Capt. Mills and his response, which included interesting reminiscence. In turn he presented a medal to President Mather, the latter having been for 20 years and 6 months in the company's service. A similar presentation to Mr. White, to whom President Mather referred as one who had served the company for 50 years, was the climax of these special recognitions.

The Cleveland Iron Mining Company was the second company organized to work iron mines in the Lake Superior region, the Jackson Iron Company having been the first. In 1848 the Marquette Iron Company was formed, and in 1849 the first ore was taken from outcroppings which later were followed down and became the original open-pit workings. The Cleveland Iron Mining Company, which was the final development of the Marquette Iron Company, was organized in 1850. The incorporators were Samuel L. Mather, M. L. Hewitt, C. D. Brayton, John Outhwaite, John W. Allen and Isaac L. Hewitt. The capitalization was $500,000—20,000 shares of a par value of $25 each. The first ore secured from the Cleveland Company's property was hauled in wagons to the Jackson Forge on the shore of Lake Superior, at the mouth of the Carp River. It was all hard ore then, the softer red hematites being a development of more recent years. In the winter of 1849-50 the company employed 20 double teams in hauling ore to the bloomary on the lake shore. One account has it that for a time the blooms from this Lake Superior forge, which cost $200 a ton laid down at Pittsburg, brought only $70 at their destination. It need scarcely be said that the bloomaries were not long-lived. Hammers and picks were the tools, black powder being scarce for years after and the dynamite of to-day being unknown. The Indian trail from Jasper Knob to the mouth of the Carp River gave way in 1856 to a plank road that was three years

in building. Then in 1857 the Iron Mountain Railroad made connection with Marquette. In the same year the canal at Sault Ste. Marie was completed; up to that time the small vessels, which were all that could pass, had been dragged over the portage and all the ore had to be reshipped at the Sault.

From 1856 to the present time the shipments of the Cleveland Iron Mining Company and its successor the Cleveland-Cliffs Iron Company have reached a total of 10,941,548 gross tons, and this year's shipments will carry this beyond 12,000,000 tons.

The shipments year by year in gross tons are shown in the following table, for which, as well as for other facts in the company's history, we are indebted to the courtesy of the Cleveland "Iron Trade Review":

Year.	Tons.	Year.	Tons.	Year.	Tons.
1856	6,243	1871	142,225	1886	201,852
1857	13,204	1872	151,724	1887	205,856
1858	7,909	1873	130,600	1888	182,732
1859	15,886	1874	101,217	1889	274,740
1860	40,300	1875	113,705	1890	699,079
1861	11,795	1876	133,019	1891	647,997
1862	36,919	1877	136,869	1892	724,746
1863	46,842	1878	142,805	1893	505,256
1864	44,960	1879	113,107	1894	335,584
1865	33,957	1880	187,386	1895	498,772
1866	42,517	1881	187,312	1896	498,532
1867	76,715	1882	204,640	1897	600,081
1868	109,697	1883	218,170	1898	831,410
1869	106,133	1884	225,295	1899	1,024,990
1870	132,774	1885	218,253		

The leap from 274,000 tons in 1889 to 700,000 tons in 1890 marks the consolidation of the Cleveland Iron Mining Company and the Iron Cliffs Company, which took place in the latter year. The shortening of the Cleveland Iron Mining Company's deposits and a look toward the remoter future made this move highly desirable. The Iron Cliffe Company, which had charcoal furnace interests at Negaunee, brought to the consolidated company important mines—the Cliffs Shafts, Salisbury, Foster and Michigamme. The Moro, abandoned for many years, and now being worked on a small scale was for a long time an important property of the Cleveland Iron Mining Company, while the Cleveland Lake Mine, which has been wrought since the pumping out of Lake Angeline, is now the most important of the deposits of the original company. In addition to the above there are now being worked the Imperial and Webster mines at Michigamme and the Tilden Mine in Tilden Township. In 1899 the company acquired an interest in the fee as well as in the lease of the Queen group of mines at Negaunee.

The land holdings of the Cleveland-Cliffs Iron Company are more extensive than those of any other Lake Superior mining company. When the merger with the Iron Cliffs Company took place the latter had 50,000 acres of mineral and timber lands and the Cleveland Iron Mining Company 3,000 acres of mineral lands. These holdings have been steadily extended and to-day there is controlled through ownership and lease about 125,000 acres. From the timber lands fuel for the company's charcoal is secured, and the supply is ample for many years to come.

The company owns the Pioneer Furnace at Gladstone, which is a charcoal furnace 60 ft. high and 12 ft. bosh., built in 1896, and having a capacity of 125 tons a day. In connection with the charcoal kilns which supply fuel there is a by-product plant, and the company does a profitable business in wood alcohol and acetate of lime. This furnace is the successor of the original Pioneer Furnace at Negaunee, which had two stacks, each 40 by 9½ ft., built in 1858 and 1859, rebuilt in 1877 and finally dismantled in 1896. The Negaunee Furnace was built by a separate company and sold to the Iron Cliffs Company in 1866.

The company has always been largely interested in the transportation of its ores. Its records show that the highest average freight on ore through one season was $4.17 per ton from Marquette, in 1866. The first vessel property owned by the Cleveland Iron Mining Company was the bark "General Sherman," a half interest in which was bought in 1867. This vessel was of wood, capacity 550 tons, and the half share was purchased for $14,000. The contract of the mining company with the "Sherman" was at $3.25 for carrying ore from Marquette. The average of wild rates from Marquette has gone as low as 55c. in one season—that of 1897—while the average contract rate on ore from Marquette has gone as low as 60c.—that being the rate in 1898 and 1899.

In 1872 the Cleveland Transportation Company was organized, a controlling interest being taken by leading stockholders in the Cleveland Iron Mining Company. This company bought the steamers "Geneva," "Vienna," "Sparta," and "Havana," and the schooners "Genoa," "Verona," "Helena," and "Sumatra." The steamers carried 1,000 gross tons each and the schooners 1,100 tons each on a draft of 12 to 12½ ft. A contract was made in 1872 for five years, with the Cleveland Transportation Company to carry ore to Cleveland at $3.50, to Ashtabula at $3.65 and to Erie at $3.75. In 1888 the Cleveland Iron Mining Company contracted for two steel steamers, the "Frontenac" and "Pontiac." Leading stockholders of the mining company purchased the wooden steamer "Calayuga" and the schooner "Fontana" in 1899. Three years later the "Cadillac" and the "Pioneer," steel steamers, were built by the Cleveland Iron Mining Company; in 1899 the company purchased the wooden schooner "Chattanooga," and in 1899 the steel steamers "Choctaw" and "Andaste" were acquired from the Lake Superior Iron Company and added to the fleet of the company. Leading stockholders of the company have a half interest in the Presque Isle Transportation Company, the other half being held by stockholders in the Pittsburg & Lake Angeline Iron Company. The vessels thus owned are the "Presque Isle," 426 ft. long, capacity 6,000 tons on 18 ft., and "Angeline," 435 ft. long, capacity 6,300 tons on 18 ft. 4 in. Prominent stockholders in the Cleveland-Cliffs Iron Company also own the "Centurion." The total tonnage operated from the office of the Cleveland-Cliffs Iron Company is 44,125 tons on 18 ft. draft.

The company also controls a half interest in the Lake Superior & Ishpeming Railway, completed from Ishpeming to Marquette in 1896, and having extensive ore docks.

The presidents of the Cleveland Iron Mining Company and the Cleveland-Cliffs Iron Company have been as follows: M. L. Hewitt, elected in 1851; Selah Chamberlain, elected in 1855; Wm. J. Gordon, elected in 1856; Geo. Worthington, elected in 1866; Samuel L. Mather, elected in 1869; Wm. G. Mather, elected in 1891. In the Iron Cliffs Company the most prominent officers were Samuel J. Tilden and Hon. Wm. H. Barnum, the former being president from 1864 to 1869 and the latter from 1869 to 1886. John H. Abeel was president of the Iron Cliffs Company at the time of the merger in 1890. The present board of directors of the Cleveland Cliffs Iron Company consists of Wm. G. Mather, J. H. Wade, E. R. Perkins, Samuel Mather, J. H. McBride, Samuel E. Williamson, W. S. Tyler, J. H. Hoyt, Peter White. Wm. G. Mather is president and treasurer, J. H. Wade vice-president, J. H. Sheadle secretary, Robert A. Mann auditor. Frederick A. Morse is secretary of the Cleveland Iron Mining Company, which still maintains its organization. M. M. Duncan is the agent of the company in charge of its mining operations at Ishpeming. Austin Farrell is manager of the charcoal blast furnace at Gladstone, Mich.

ABSTRACTS OF OFFICIAL REPORTS.

Central Mining Company, Michigan.

This company reports for last year only receipts of $845 for interest, etc., and expenditures at the mine of $10,926. The balance brought forward from the previous year was $6,867, so that there was a debt of $3,214 at the close of the year. The report says: "We have caused some explorations to be made with diamond drill in a locality where by surveys we had hopes of finding the continuation of a deposit which is worked profitably a few miles distant, but nothing of value was developed before the advent of snow put a stop to work of this nature. The property owned by the company is of such extent that a trial of this kind is by no means conclusive, the holes bored passing through a very small section of the territory, and it would seem to be desirable that explorations in some form should be continued during the next open season, when it is to be hoped that the search will meet with better results. Negotiations now progressing for a sale of a small portion of the timber lands owned by the company will probably extinguish the indebtedness shown in this statement."

Independence Town and Mining Company, Colorado.

The report of this company for last year shows that the net royalty received on 3,079 tons ore mined by lessees was $42,324. The net receipts on 4,148 tons mined by the company were $142,544. The average gross value of company's ore was $46.28 per ton; lessees' ore, $55.42 per ton. The company reported a cash balance of $47,024 at the close of the year.

The president's report says, in part: "The operations of the company during the year have been confined principally to the prosecution of development work underground, the opening up of ore reserves, and the erection of an extensive and permanent surface plant. No effort has been made at ore production beyond a tonnage sufficient to meet current expenses and the maintenance of a cash reserve. Owing to vexatious delay in the delivery of structural steel, the new ore house is not yet fully completed. The main three-compartment shaft has been sunk to the depth of 570 ft., and stations cut at 300, 400, 475 and 550 ft. The annual report of Superintendent W. H. Burns shows that 2,240 ft. of levels have been run during the year, and 138,847 cu. ft. of stoping done; 23,130 cars of ore and 11,825 cars of waste have been hoisted, each car averaging about 1,600 lbs. An average of 192 shifts have been employed each 24 hours, and the average wages paid for each 8-hour shift have been $3.33. The pay-roll during the year was $92,786. Cross-cuts have been run easterly and westerly from the main shaft, and several veins, not heretofore known to exist, have been discovered. At about 125 ft. easterly from the shaft, a strong vertical vein was cut at the second and fourth levels, showing fair values. At about the same distance westerly from the shaft another vein was cut, equally as strong, and showing as good values as the east vein. The Fox Vein, to which most of the operations have heretofore been confined, has dipped out of the shaft to the westward, and should the present dip continue will unite with the West Vein at about the sixth level, or 750 ft. from the surface. During most of the past year shipments have been made from above the 400-ft. level and from old workings left over by lessees from 1898, the average gross value of which was about $55 per ton. In the lower levels, and from the new veins opened up, the average gross value of ore shipped recently is about $65 per ton. The operations of the company have not been materially interfered with by pending litigation.

"Several sets of lessees have been engaged upon the property during the year resulting in considerable development. The Whiting lease, upon Blocks 13, 18 and 19, has been productive, although all the earnings have been expended in additional development work. The shaft has reached a depth of 600 ft., and the vein was cut at that depth, about 100 ft. westerly from the bottom of the shaft, showing considerable improvement in both quantity and quality of ore. The waste dump at the main shaft is under lease to R. P. Russell, who pays the company a royalty of 33 1/3 per cent. on the washings. About 140 leases are outstanding upon town lots belonging to the company, from which an annual income of about $3,500 in rentals is derived.

"In July a suit was instituted by the Wilson Creek Consolidated Mining and Milling Company on behalf of the Minnie Belle lode, and later another suit was instituted by the same plaintiff on behalf of the Little Effie lode, both of which suits are now pending in the District Court of Teller County. These two suits, together with one instituted two years ago by Dunham and Gedney on behalf of the Scottish Chief lode, are the only ones pending which materially affect the company's title to its property. The theory upon which these suits were instituted is that these alleged lode claims were valid subsisting lode locations at the date of the application for the placer patent, and as such did not pass to the patentees under the placer patent. In the Minnie Belle case the territory involved is a strip from 45 to 60 ft. in width and about 1,300 ft. in length along the western boundary of the placer. In August last both parties were enjoined by the court from working this strip of ground pending the litigation. In the Little Effie case a much larger and more valuable tract is involved, but no injunction has been granted nor asked for in this case."

THE CHLORIDE DISTRICT, ARIZONA.

Written for the Engineering and Mining Journal by Dr. Theo. B. Comstock.

The development of Arizona mines is advancing gradually, but in a geometrical progression. Some statements well within bounds will appear startling to many, but only because they have been ignorant of what has transpired. The newer developments have been founded upon old workings, in many cases. In some instances this means prior abandonment without justification, but for the most part it only signifies that greater economies and increased facilities have co-operated with the application of capital to carry the explorations deeper and to surmount obstacles not otherwise removable. Although this satisfactory result has been accomplished in many portions of the territory, with great enhancement of the output from the mines, there is no district which has been more favorably affected than an area in Mohave County, with the town of Chloride as its commercial center.

The writer has presented this tract to the readers of the "Journal" more than once, in papers of general character. At first, in 1896, shortly after the revival of work began, it was not possible to do more than to outline the general features of the region, and later some account of the developments more in detail was the limit of one's ability to report. But as early as 1892 I had gained from observations in other parts of the territory such an inkling of the general geology as to make some predictions regarding the trend of future discoveries, the remarkable fulfillment of which justified the extension of the prophecy in later years by applying the same principles more minutely in individual districts.

Step by step, by collating the scraps of evidence obtained from all over Arizona and the adjacent country in California, Nevada, Utah, New Mexico and the States of Sonora, Chihuahua, Sinaloa and Durango, in Mexico, I have been able to acquire enough material for safe generalizations, which have been worked out and fully illustrated by examples in a lengthy paper* presented in abstract at the San Francisco meeting of the American Institute of Mining Engineers, last October. The very brief outline, which was all that could be given in the few minutes allotted upon the occasion, appeared to excite some surprise; for that meager statement elicited from President Douglas of the Institute the remark that the announcements were "startling" to workers in the field. In the complete paper abundant facts are given in support of every conclusion, and I may be pardoned for adding here that an experience of nearly 10 years in applying these same conclusions in practice, as they have beeen worked out, has materially strengthened my own faith in them. In hundreds of instances the writer has been able to determine one of three factors when the other two have been given, and in very many cases only one need be known to determine the remaining two. The three elements are vein trend, geologic structure and vein ingredients. It is but a corollary to this proposition to state that, if the location be given, the character of the vein can be deduced readily after obtaining replies to one or two very simple questions.

There is room here only for a mere epitome of the very condensed abstract referred to above, but it is necessary to give this much in order to make clear the relations of the Chloride District to the Arizona complex. Confining our attention to economic considerations, the veins of the great southwest region are conveniently grouped under four heads, apparently representing as many periods of geologic history. We have, then:

1. Auriferous (free gold) belts, pre-Cretaceous, occurring in axial folds trending east-west.
2. Plumbo-cupro-argentiferous belts, post-Cretaceous, in fault fissures trending northwest-southeast.
3. Gold and copper mixed belts, Tertiary(?), occupying bed-plane crevices largely, trending northeast-southwest.
4. Argentiferous (high grade) deposits, post-Tertiary, locally segregated in radial cracks, with Crater foci.

Although each of these classes is distinctively the dominant type in particular areas, all are liable to occur in any district, and some complications of structure may be expected in tracts where the latter series are most in evidence. Moreover, the vein contents of the later groups are largely derivative from the earlier in some ingredients. Hints of different agencies as causes of deposition are very strong. The topography, especially the hydrography, of the whole region is in marked consonance with the vein trend, so much so that good maps may almost be taken as mineral charts. All this is explained in multitude of detail in the paper referred to. It need only be added here that ample confirmation of my earlier views has come from the discoveries in the King of Arizona and La Fortuna mines in Yuma County; the development in the Sheep Trail, Klondike and other mines in the Colorado River Valley, in Mohave County; the increased gold output from Mohave County, once regarded as only a silver producer, and the discovery of copper ores in districts previously regarded as barren. These results were all predicted by myself in 1892 and 1893, and I now prophesy that there will be many more similar discoveries, and that these will be made in accordance with principles of distribution laid down in a clear manner in my forthcoming dissertation.

In this article the Chloride District is taken as the text, because it is the field in which my most detailed work has been done. The Elkhart Mine has yielded much of the information, but illustrations from all over the adjoining region have been frequently gathered.

As late as 1896 Mohave County was regarded as a silver district, and the mines were practically shut down for lack of means to work them. Even the very rich deposits of Class 4 were merely furnishing precarious support to "chloriders," and no signs of activity were discernible except at White Hills. The mail-stages between Kingman and White Hills, formerly making 6 trips per week, were cut down to tri-weekly service. In the southern half of the county practically nothing was doing in a mining way. At this juncture your correspondent was called to examine a gold property in the northern part of the county, and the investigation proved that the important veins of Class 1 are only partially buried in this district, and that they are liable to be encountered at intervals in the deeper workings of properties having later veins in the superficial zone. The Elkhart Mine, then some years idle, was purchased for British clients at the price of a prospect, although partially developed. At surface this property, like the Tennessee, Payroll and similar mines around Chloride, has all the characteristics of Class 2, but there is also a modified expression of some of the peculiarities of Class 3, without the typical geographic relations of that group, and also with exceptional physical and chemical features in vein ingredients. The principal economic consideration, however, is the distinct impress of the influence of members of Class 1 in furnishing the supply of gold, which is not a constant product, but one distributed with a certain degree of regularity.

After the rehabilitation of Elkhart, late in 1896, the result of its development induced others to invest in the Chloride District. The Tennessee, on the same vein, soon followed suit, and its history has been much the same, except that the mill products of the Elkhart have been more varied and the gold values greater. This difference is local, and now the Tennessee is driving in ground which runs higher in gold than formerly.

The second period in the camp's history closed in August, 1889, when the Arizona & Utah Railway Company began running daily trains from Kingman on the Santa Fe system to Chloride Station. The transportation service is quickened and cheapened between the termini of this little line, as compared with the former hauling by teams, and other manifest advantages have accrued from the construction of the road, so that there is little more to ask until such time as the company can begin to get fair returns upon its investment.

The mines have, individually, had to contend with conditions which are not understood by those who observe from without. The newspapers and many prospectors have persistently advertised the camp as one yielding high-grade ores. This has acted both favorably and unfavorably, because it has attracted capital but has disappointed some who have thus gained erroneous ideas. There are rich gold ores, and shipments have beeen made of limited amounts of very high-grade gold and silver ores. These are not, and they cannot be, the foundation of steady income to large corporations, however much they may serve as bait for speculators, and the mere promoters of mining companies who do not stay with their fledglings. The reliable average product is the only safe basis upon which to invest for steady dividends.

The distribution of the gold is a very important consideration. As far as this is concerned we now know that it appears in some properties in quantity and in others very sparingly. The fact and the mode of occurrence were understood some years ago, but the law of distribution was not worked out. This I have been able to determine and have announced in the paper read before the Institute, with abundant examples.

The very first consideration, therefore, is the location of the property. Having secured one that meets the conditions aright, the next problem is the dressing of the ore. In the majority of cases this is not difficult to one accustomed to such work, but the details cannot be safely entrusted to inexperienced hands. Where gold is an ingredient of importance it introduces elements which complicate the methods. But as a rule the concentrating ores are dressed without recourse to any but the ordinary machines used in coarse concentration—simple crushing apparatus, with sizing, classifying, jigging and vanning appliances. The Elkhart Mill was the first constructed, the Tennessee next, and the Merrimac last. The capacities differ greatly, and there are some differences in the plans, due almost wholly to variations of importance in the materials treated.

The Elkhart plant is provided with slime dressing machinery which at one time was freely used, but gradually, through a systematic course of investigation, with daily assays of all products, it was found uneconomical to recrush the jig tailings without providing a means of home treatment for fine concentrates, which also ran well in gold (pyrite), with too much lead (galena) for adaptability to convenient reduction. We therefore gradually changed the dressing method until we had accomplished the very complete separation of the galena in the first crushing, allowing only the tailings from the first jig (material through ⅝-in. mesh and over ⅜-in. mesh, revolving screens) to be recrushed. Arrangements are under way to rehandle the finer tailings from jigs Nos. 2, 3 and 4, but at present these are sent to middlings dump for storage. The shipping products consist of (1) pure galena, obtained chiefly from the first compartment of jig No. 4; (2) galena and pyrite from first compartment of jigs 1, 2 and 3, and from second compartment of jigs 2, 3 and 4; (3) pure pyrite from third compartment of jigs 2, 3 and 4; and (4) vanner headings composed of galena and pyrite. Mixtures, in carload lots, are made up for shipping by daily assays of all head products, the aim always being to work off as much pyrite as possible without reducing galena so low as to incur a roasting charge at the smelter. When working average ore a small percentage of blende and a certain portion of pyrite is washed over the vanners, some skill being necessary in the operative to adjust this properly. The pyrite is of two kinds, distinguishable by color; the "white iron" carries almost no gold, whereas the "brassy pyrite" is auriferous. The latter occurs often as specks in the quartz and is largely retained in the jig tailings. To some extent a concentration of the auriferous pyrite is accomplished in the third compartments of jigs 2, 3 and 4; that is to say, product No. 3, above, is more highly auriferous than any other product, but it also contains a fair percentage of barren pyrite. In compartment 4, of all the jigs (except No. 1, of Clausthal type, having but 2 compartments) the bulk of the blende is collected, but as this mineral contains some values, separation is not attempted beyond what is necessary to avoid the penalty for zinc at the smelter. The blende is usually tough, and thus a small portion is passed over the coarser jigs in the tailings. The tailings from first jig are recrushed in belt rolls.

The Tennessee Mine has heretofore had simpler metallurgic problems, owing to the character of the ore. They have consequently run a large product daily with a mill of half the rated capacity of the Elkhart plant but very much of the ore has really required but little dressing, the separation of galena from quartz being about all that has been attempted in the coarser grades. Their separation of blende from galena has not

* "The Geology of Arizona," by Theo. B. Comstock; with map.

been carried to the same extent as in the Elkhart. These differences are but temporary, the Tennessee having recently encountered the gold-bearing pyrite in a part of the workings.

The Merrimac Mine has worked an ore of different quality, requiring other treatment. The Minnesota, like the old Tuckahoe, has had similar output, and all three of these mines have adopted identical methods. The Tuckahoe was erected, and practically abandoned, before the Elkhart plant was built, and the Minnesota mill utilized much of the Tuckahoe machinery, but the Minnesota had a small crude plant in irregular operation before this. The ores from these mines require fine crushing and slime dressing, the valuable mineral being in specks of silver sulphides, for the most part. These deposits belong almost wholly to Class 4.

The dressed products of the Chloride District are suitable for smelting. With local reduction works everything could be utilized, and fluxing ingredients are plentiful. At present a considerable amount of the output must be retained at the mines owing to the cost of transportation, although another large part is actually carried to market now by mixing with lead concentrates. Efforts have been made to induce capitalists to erect a lead smelting plant at some point within reasonable distance, and this end will undoubtedly be gained sooner or later. Meanwhile it will be feasible for local companies to advance one step in ore treatment by roasting their own pyritous concentrates and cyaniding the oxidized material or concentrating the values in matte. Experiments made by the writer have demonstrated the practicability of this method, and an installation at the Elkhart mines is now under advisement.

A smelter project at Needles, California, about 80 miles from Chloride, has progressed far enough to be regarded as a certainty, so far as starting up is concerned. It ought to be successful if managed by competent men. No plans have been made to include roasting appliances, but these will soon be required to treat the large product of pyritous concentrates which have already begun to accumulate at the mines, unless the mine owners construct their own reduction plants.

The next period in the history of Chloride will be even more important. The developments in the larger mines have gone beyond the scope of small companies, and large investors with nerve enough to expend freely where the conditions of success are clearly demonstrated must succeed the average operator whose capital is limited. It is now only a question of time and capital wisely applied under skilled engineering methods. The same energy and boldness which have characterized the business of mining and ore treatment in other districts will ere long be applied here, and the rewards will be no less gratifying.

ELECTRICITY AT A BELGIAN COLLIERY.—The electrical installation at the Courcelles-Nord Colliery, Belgium, formed the subject of an interesting communication to the Charleroi committee, or section, of the Societe des Ingenieurs des Mines du Hainaut, by M. Eugene Beauthier, engineer at that colliery, says the London "Colliery Guardian." The installations comprise three central stations, which generate the electric current for several applications of power, and also for lighting both under ground and on the surface. The central station of pit No. 8 supplies the current required for a power transmission at the level of 376 m. for driving a 60-H. P. electric hauling engine and a 33-H. P. electric pumping engine. The two generating dynamos, of 88 H. P. at a tension of 620 volts, are driven by two 100-H. P. condensing steam engines with expansion on the Hoyois system. Detailed drawings of the electric hauling and pumping engines, with specimens of the conductors used and of their supports were shown to the members; and information was given as to the cost of the installation.

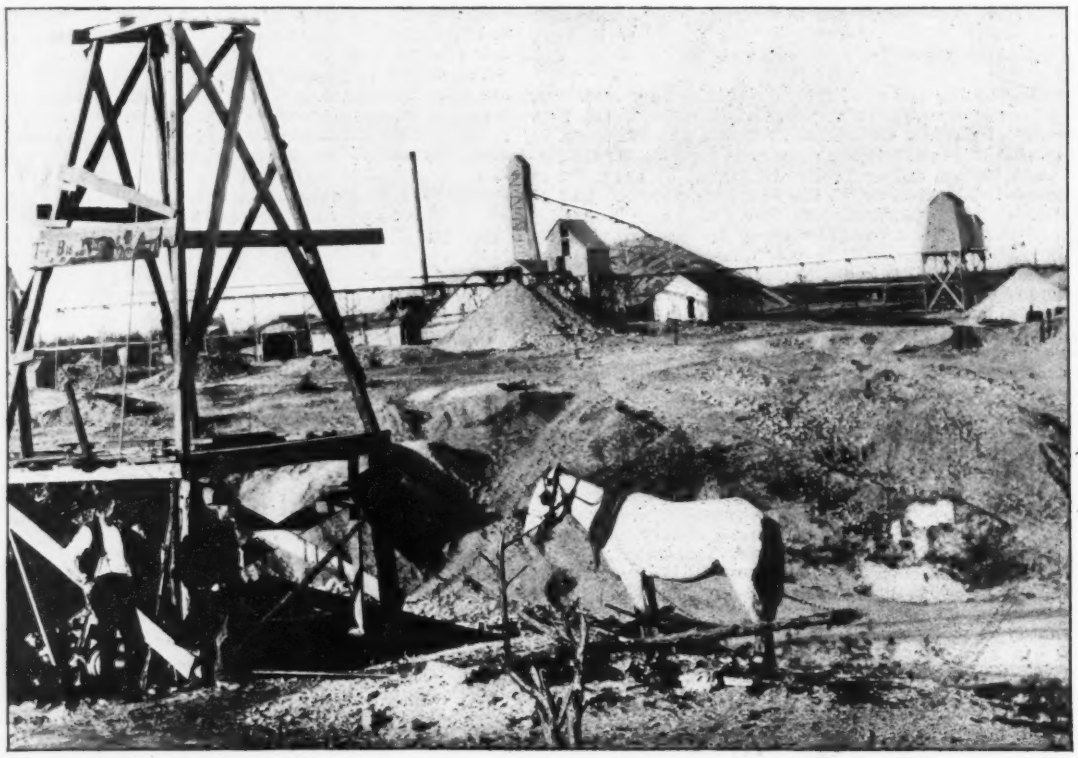
THE MISSOURI-KANSAS ZINC AND LEAD MINES.

Written for the Engineering and Mining Journal by Harold A. Titcomb.

The great zinc-lead fields of southwest Missouri and southeast Kansas have been brought into increased prominence during the past year. The generally prosperous condition of the country has exerted a favorable influence on all mining centers, and the zinc fields received their full share of increased activity. Outside capital has been freely invested, and zinc mines have been favorites with the Eastern investor.

The operating of mines on leased land is an almost universal practice in the zinc district. Much has been said for and against this lease system; but the fact that the annual output of the mines has reached a value approximating $10,000,000 is a strong argument in favor of the system. It may be regarded as a natural outgrowth of the rather unique mining conditions, where scores of square miles of territory are more ore less underlain with deposits of mineral.

Regarding this lease system, it may be briefly stated that the landowner gives a first lease entitling the holder to mineral rights on fairly large tracts of land (usually 10 to several hundred acres). The royalty to be paid to the land owner varies with the supposed desirability of the land, and is often 8 to 15 per cent. of the gross output of mineral.



PROSPECTING SHAFT AND OUTFIT AT GALENA, KANSAS.

The holder of the first lease, which is usually drawn for a period of 10 years, prospects his property either with drill holes or shafts, or both; and, if mineral is found, he then sub-leases portions of the property to the mine operators. The royalties paid on second leases are 15 to 25 per cent. of the gross output of mineral. These second leases consist of a certain number of "lots," each 200 ft. square.

In some cases the fee holder operates his own mines, and often the holder of a first lease prefers to work a rich deposit rather than be content with royalties.

The great number of miners who are working their own properties under the lease system are so many safeguards against the injurious labor strikes which are liable to occur in mining regions.

A brief description of the zinc ore bodies may be of interest to those unfamiliar with the region. The Joplin zinc ore is sphalerite or blende, with subordinate galena, and occurs in pockets, caves, sheets and irregular bodies in lower carboniferous limestone. The strata of limestone are thickly interbedded with chert, and this chert is an almost universal accompaniment of the zinc ore. The blende, or "jack," as it is called, is associated with galenite, calcite, dolomite and marcasite. The last-named mineral is commonly called "mundic," and is objectionable in the ore.

Mining is done from the grass roots down to 250 ft. The average depth of all shafts operated is about 120 ft.

Prospecting for ore is usually done by drilling with a "churn drill" (cable-tool system); but the prospector with limited funds at his disposal prefers sinking a shaft, as he himself then furnishes a portion of the large cost item of labor.

With the advent of large mining companies and abundant capital, drilling is increasing in favor, and holes are put down to greater depths than formerly. Many companies are not satisfied with drill holes less than 250 or 300 ft. deep, and rich ore has been struck at greater depths.

Messrs. Crossman & Bros. claim that their experience in drilling goes to show that very large deposits of zinc ore are to be found at depths of 500 ft. or more. A chart prepared by them was published in the "Engineering and Mining Journal" March 18th, 1899.

The contract price of drilling for ordinary depths is $1.25 per foot of hole; but better figures can be obtained on large contracts. If a company contemplates drilling 5,000 or 10,000 ft. of holes, or more, it would pay to consider the purchase and operation of one or two drills under competent management, as a considerable saving could be effected over the ordinary contract prices. Owing to the shattered condition of the rock formation and to the presence of chert in irregular and broken masses, diamond drills have not met with success in the zinc region.

The cost of shaft sinking is, of course, very variable. Shafts are often sunk on contract, the price paid varying with the locality and with the kind of ground. A 6 by 7 ft. shaft 80 ft. deep was sunk on contract, process, thus avoiding excessive production of slimes and decreasing the wear on the machinery.

The new concentrating plant of the Missouri Lead and Zinc Company is an example of the best class of zinc mill thus far erected. This plant was described in the "Engineering and Mining Journal" June 2d, 1900.

The unprecedental high prices received for zinc ore during the year 1899 were a great stimulant to prospecting and mining investment. During the fiscal year ending June 30th, 1899, the Missouri State Mine Inspector estimates the amount of outside capital invested in Missouri mines as at least $10,000,000; and since that date the investment of capital in zinc mines has probably been very nearly as liberal.

CONTINENTAL ZINC COMPANY'S MILL NEAR JOPLIN, MISSOURI.

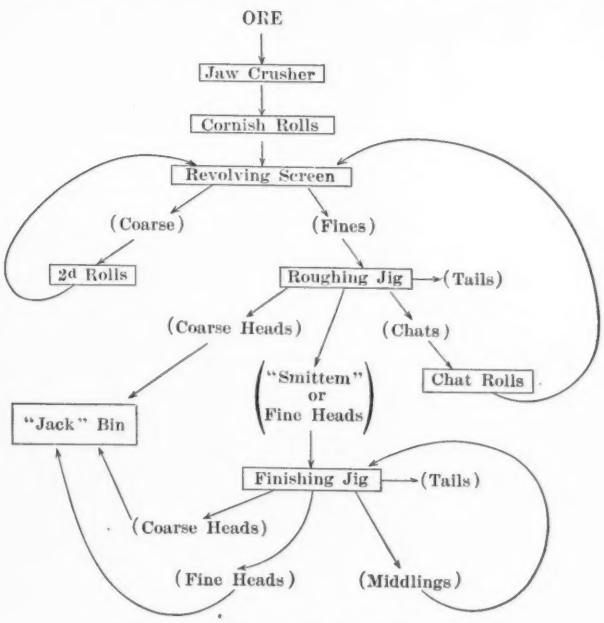
in the Belleville District, for $2 per foot of depth. This shaft was in soft, open ground. A 5 by 7 ft. shaft 70 ft. deep, 2 miles west of Joplin, cost $20.25 per foot of depth, this figure including a small boiler and pump. A 125 ft. shaft, 1 mile west of Joplin, cost $14.30 per foot of depth. This shaft was sunk through 90 ft. of hard flint and limestone, and 35 ft. of open ground.

Upon striking pay dirt, if there is a large enough percentage of free ore the miner erects a small grizzly to screen out the coarse rock and puts in two or three hand jigs to clean the ore and render it salable. This is a wise method of procedure, for very often the ore body is not large enough to justify the cost of building a steam concentrating plant.

After sufficient development work has been done with the hand jig plant to open up the ore deposit, if the faces of ore are large enough and sufficiently promising a steam mill is constructed, the usual cost being $6,000 to $8,000 for an ordinary 100-ton mill. Such a mill will actually treat about 50 to 80 tons of mine dirt per 10 hours, depending on the quality of the dirt. A hard flint ore is brittle, and easily passes through the crusher; while clayey ore tends to choke up the machinery and lessens the capacity of the mill.

PROSPECTING SHAFT IN THE JOPLIN DISTRICT.

An outline of the system of ore treatment common in the zinc district is given, elevating machinery not being indicated in the sketch herewith. During the past year scores of new concentrating have been erected, and many of these have introduced modifications of this system of ore treatment. These modifications consist mainly in the introduction of screens or grizzlies at various stages of the crushing



SCHEDULE OF TREATMENT FOR ZINC ORES.

The high price of zinc ore was undoubtedly due to considerable extent to the Missouri & Kansas Zinc Miners' Association, which was formed in December, 1898. This association comprises a majority of the mine operators in the district; and by bringing about the exportation of large quantities of spelter when the domestic market was overstocked, and by other methods, the association has exerted an influence in establishing a more satisfactory scale of ore prices.

The usual method of selling ore in the zinc district is not a thoroughly satisfactory one to the ore producer. The ore buyer makes the rounds of the mills on his circuit, looks at the ore in the jack bin, and offers a certain price per ton. This price must be accepted by the producer or his ore remains unsold; and when the buyer makes his rounds the following week he is sometimes tempted to offer a dollar less per ton for the same lot of ore, as a gentle reminder that he is a paramount factor in the sale and purchase of ore. There is, at times, strong competition among ore buyers, and the producer then reaps the benefit of this competition. It would seem reasonable that some system of ore sampling, perhaps by sampling works such as are successful in the West, would be applicable to the Joplin Region, and ore prices so determined would certainly be more equitable.

The ore prices published weekly by the Producers' Association are based on the price of spelter, the price of one ton of zinc ore assaying

60 per cent. metallic zinc being taken as 7 times the value of 100 lbs. of spelter at St. Louis. Thus if spelter in St. Louis is quoted at $4.60 per 100 lbs., the association price for a ton of 60 per cent. zinc ore would be $32.20. These published prices are not always realized by the ore producers. An example of the association prices for ore, and the detrimental effect of iron is shown in the following table:

Schedule of Ore Prices for the Week of February 12th, 1900.

"Joplin, Mo., Feb. 12, 1900.—To the members of the Missouri & Kansas Zinc Miners' Association:

"Dear Sirs—At the regular meeting of your Board of Directors, held last night, the following schedule was adopted as the minimum scale of prices for zinc ore during the present week:

Per cent.	Price of Ore Free from Iron.	Price of Ore Containing Iron. 1%	2%	3%	4%
63	$36.00	$35.00	$34.00	$33.00	$32.00
62	35.00	34.00	33.00	32.00	31.00
61	34.00	33.00	32.00	31.00	30.00
60	33.00	32.00	31.00	30.00	29.00
59	32.00	31.00	30.00	29.00	27.50
58	31.00	30.00	29.00	27.50	26.00
57	30.00	29.00	27.50	26.00	24.50
56	29.00	27.50	26.00	24.50	23.00
55	27.50	26.00	24.50	23.00	21.50
54	26.00	24.50	23.00	21.50	20.00
53	24.50	23.00	21.50	20.00	18.50
52	23.00	21.50	20.00	18.50	17.00
51	21.50	20.00	18.50	17.00	15.50
50	20.00	18.50	17.00	15.50	14.00

"Very respectfully, L. Vawter, Secretary."

The statistics for the district for 1899 were published in the "Engineering and Mining Journal," January 6th, 1900; and the sales and prices for each week are given in our news columns.

The zinc ore prices for the first quarter of the year 1900 have been much lower than for the corresponding three months of 1899, and the production has been about 10 per cent. greater than for the first quarter of 1899.

As to the future price of ore, an important influence will be exercised by the large number of zinc concentrating mills which are idle with ore selling at $30 or less. Many of these mines and mills could be operated profitably with ore at $35 to $40 or more; and should the price of ore rise to these figures, the output of zinc ore for the district would be increased by a considerable amount from the production of these mills. The increased supply of zinc ore would then tend to depress the market. These idle mines, therefore, are seen to act as a sort of safety valve on the price of zinc ore. The large number of new mines being constantly opened up will increase the supply of zinc, and unless the demand for spelter bears a corresponding increase, there is little reason to look for much higher prices.

ELBERS'S METHOD FOR USING MINERAL WOOL.

Mr. A. D. Elbers, whose studies in the properties and possible utilities of slags, slag products and mineral wool are well known, has recently taken out a United States patent—No. 653,077, dated July 3d, 1900—covering certain methods of treating and using mineral wool, which are described, substantially as follows, in his specifications. His invention relates to the conversion of mineral wool into elastic bricks, sheets, ectional pipe-coverings, and similar moldings. It consists in making elastic mineral wool moldings in the manner hereinafter specified, and it also consists in the new articles of manufacture thereby produced.

Though mineral wool has been used for insulating heat and cold and sound for over 20 years past few devices have thus far either been made known or put into operation whereby this material can be applied in a practical and marketable manner, excepting to pack or stuff it in its loose state into the spaces that are to be deafened. In applying it in its loose state to boilers and steampipes it has to be held in place by a jacket or casing especially provided for that purpose, which mode of application costs about twice as much or more than the wool itself, and in deafening walls it has to be forced into narrow spaces that must be boarded up as the work of stuffing progresses, a manipulation that has to be performed with great care if the work is to prove satisfactory. Moreover, such deafenings are apt to sag considerably when they get wet. In applying ordinary mineral wool it is usually stuffed to a density of about 18 lbs. to the cubic foot. It then contains about 9 volumes of air to 1 volume of solid substance, and consequently can absorb about 3 times its own weight of water, which is more than it can sustain without settling. Hence such deafenings may become seriously damaged in roofs and walls by leakage during heavy rains, and pipe and boiler coverings are apt to become affected in a similar way by the condensation of escaping steam. This renders it possible to apply mineral wool in its most desirable state of compression and consistency, as well as in shapes that are suitable for the intended application. If, for instance, a wall-space is to be lined 3 ft. in the clear between timbers or joists and 3 in. deep, the wool may be applied in the shape of elastic bricks 9 by 4 by 3 in. in size, of which 12 will be required for a course 1 ft. high, or 36 for a square yard. A brick of that size will weigh nearly 1¾ lbs., or at the rate of 27 lbs. to the cubic foot, and at that weight it will contain nearly 5½ volumes of air to one volume of solid substance, at which density the material attains about its highest degree of efficiency as a non-conductor. In laying the bricks they are to be pressed against each other rather tightly, and then the courses will stay in place and may be carried up to the ceiling without being boarded up. The bricks may also be cemented together by wetting their contacting surfaces with a suitable agglutinating solution, but this is not necessary if the deafened spaces are later on to be lathed or boarded up. For covering boilers the wool can be molded into sheets that are sufficiently pliable to be bent to the required curvature, and for covering pipes it can be molded into semicircular sections about 1 ft. long that are easily fastened upon the pipes with a piece of string or wire. For all of these applications it is essential that the moldings should be somewhat elastic (as otherwise they could not be joined tightly by merely pressing them together) as well as sufficiently tough to withstand rather rough usage, the latter property being especially desirable for the commoner or cheaper products, such as the bricks, because they may then be shipped in bulk.

The agglutinating properties of more or less diluted solutions of silicates of soda and potash are well known, and even the solutions of caustic alkalies and their carbonates have similar though less pronounced effects on such compositions as mineral wool consists of. It might therefore be considered a very simple matter to convert mineral wool into molded material of the desired properties by reducing it in admixture with such solutions to a wet pulp, pressing the latter in molds, and drying the moldings; but even the finest mineral wool is not sufficiently plastic for such treatment, because it contains a large amount of shot or sand-like particles that are intimately intermixed with or adhere to the fibrous parts. If such a mass is stirred in the wet state, the shot separates by gravity and collects in spots, and the plasticity of the mass becomes thereby reduced to such an extent that it will not hold together after molding unless it has been treated with an agglutinating solution of such strength that the moldings will become hard and brittle in drying. Moreover, a mineral-wool pulp that has been completely saturated with a solution becomes too compact to yield moldings of sufficient lightness.

It is best to treat the mineral wool at or near the works where it is made in order to be able to obtain it without much handling direct from the collecting chambers into which it is blown. This is almost a necessity, because the vitreous fibers break at every handling, so that when once packed for shipment in bags or barrels they form lumps of different degrees of compactness and then cannot be loosened again like cotton or other organic fiber, to be made up into a uniform material. The wool can be easily taken out of the collecting chambers in rather uniform layers, compressed to a density of about 10 or 12 lbs. to the cubic foot, which is about the best condition for pressing it into molds. For articles of compact form and plane surfaces, such as bricks, the mold need only consist of a rectangular frame open at top and bottom and resting on a flat tray. More complicated forms need not be here considered, because any practical molder will readily know how to construct them after becoming acquainted with the peculiarities of the material, as herein described. The brick-molds may be made either of wood or of sheet metal. Their depth should be about one-sixth more than that of the moldings that are to be turned out, and they should be perforated or provided with small holes on all sides for the purpose of allowing the air to escape more freely while the wool is being compressed in them. The wool should be pressed in by hand until it will bulge out a little when the pressure is relaxed. After a mold has been filled in that way it is to be reversed in order to see whether the bottom surface has become uniform or whether it requires some more stuffing. When the contents are in good shape, about as much of the agglutinating liquor is poured into the tray as the weight of the compressed wool amounts to. The liquor is rapidly soaked up, especially if the mold is once reversed, so that both open surfaces become exposed to capillary action. If the mass is slightly pressed while this action is progressing, the liquor penetrates the whole pass without filling its interstices completely. Hence only from 100 to 125 lbs. of liquor are required for impregnating 100 lbs. of mineral wool, whereas nearly 200 lbs. would be required to saturate that quantity completely. When the contents of the mold are thoroughly moistened, they are subjected to a slight pressure, which is best performed with a lid or plunger that fits into the mold in order to reduce the thickness of the molding to the desired dimensions. The brick is then pressed out of the mold and placed on a board for preliminary drying, and after 1 or 2 hours it may be taken to a drying-room, where it will loose all of its moisture within 3 or 4 hours, provided the temperature of the room is kept up to about 300° F. The dried brick is then ready for use, and, if properly made, of sufficient toughness to be shipped in bulk. The required manipulations may be varied in various ways and some of them may be performed by well-known mechanical and automatical appliances.

The agglutinating liquor is prepared by preference, from the liquid silicate of soda of commerce, which usually consists of from 45 to 47 per cent. of the anhydrous substance and from 55 to 53 per cent. of water. Calling this, for short, a 50 per cent. solution, by reducing it to a 1 per cent. solution (by mixing 1 lb. with 49 lbs. of hot water) a liquor is obtained that has sufficient agglutinating power to answer the purpose of bonding compressed mineral wool, and with a 2 per cent. solution bricks have been made that retain their shape after having been immersed in hot water (212° F.) for 3 hours. A 4 per cent. solution is apt to render the surfaces of the moldings too inelastic. Stronger solutions are apt to render them quite stiff and brittle, and as the invention consists in making elastic mineral-wool moldings, only the use of highly-attenuated agglutinating solutions and, in the case of silicate of soda, solutions having a lower specific gravity than 1.05 is claimed.

THE EXTRACTION OF GOLD FROM AURIFEROUS PYRITES BY AMALGAMATION.*

By Thomas G. Davey.

The author is prompted to submit the following notes, not with a view to comparing the relative merits of the various processes now in vogue for the treatment of auriferous concentrates, but rather to suggest that perhaps there exists a lack of interest in the possibilities of that process known as pan-amalgamation. It has certainly come under his notice, in more than one important gold-field, that, although the necessary plant is at hand, little care has been exercised in manipulation, or importance attached to the matter of close extraction by this process.

In roasting pyritic concentrates the presence of a small percentage of silicious sand is advantageous. It is well also that the ore should not be too fine, but rather that it should contain about 25 per cent. of grit of a texture which will just pass through a No. 25 gauze, i.e., one that contains 25 holes per lineal inch; this facilitates the perfect roasting of the ore, rendering it spongy, and thus promoting the easier circulation of heat and evolution of gases. The perfect roasting of the

*Paper read before the Institution of Mining and Metallurgy, London, June 20th, 1900.

ore is, of course, essential to close extraction by subsequent amalgamation, and for this reason too great care cannot be exercised in conducting this stage of the operation.

For the sake of economy of time and fuel, fresh surface should be constantly exposed to the action of the heated atmosphere and flame of the furnace. For this purpose many types of mechanical furnaces have from time to time been introduced, such as the Howell, Stetefeldt, Ballarat Tower, Edwards's Horizontal, etc., each of which has its merits. It is intended, however, in these notes to deal with the reverberatory furnace, which, after all, is best adapted to out-of-the-way localities, and to small companies, as it can be erected at small cost, and requires no skilful, though careful, manipulation.

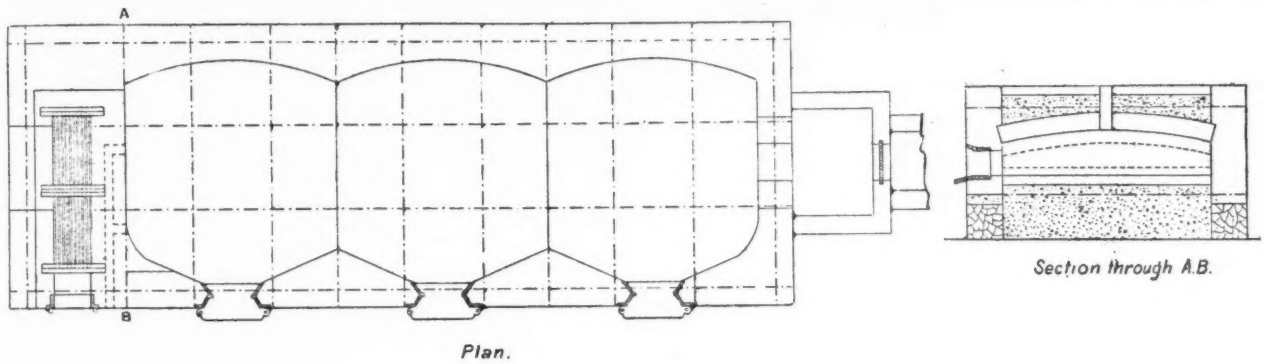
The type of reverberatory furnace which is mostly used in Australia is one with a single long inclined hearth, the incline being toward the fireplace. The object of this incline is presumably to facilitate the shifting of the ore from the cold toward the hot end of the furnace, or, plainly speaking, to relieve the workman of a certain amount of exertion. This argument is surely fallacious, for even in the act of removing the ore from one part of the furnace to another, roasting is promoted by the exposure of fresh surfaces. And, again, at least there is always the danger that crude pyrites—which, when heated to a certain point, has a tendency to flow like water—may run down the furnace and become mixed with the already partially roasted ore. The author has used, and recommends the use of, furnaces having two or more level hearths, each separated from its neighbor by a drop of about 2 in., which serves as a boundary or limit for the guidance of the workman.

The accompanying diagram is of a furnace which was used for many years with excellent results. It consists of three hearths, each being 9 ft. by 9 ft., with the corners rounded, so that each portion of the hearth may be accessible to the rake and other tools from the working door. The steps or drops between the hearths serve to guide the workman when rabbling to confine each charge to its respective hearth and so prevent any mixture of partially roasted, or even crude, ore, with that which has reached a more advanced stage.

The spring of the crown of the furnace is reduced to a minimum, compatible with strength, in order to secure an even distribution of the flame over the whole width of the furnace. The crown of the furnace is 2 ft. 4 in. above the hearth at the fire-bridge, and falls to 1 ft. 8 in. at the first step, which height is maintained at each successive step.

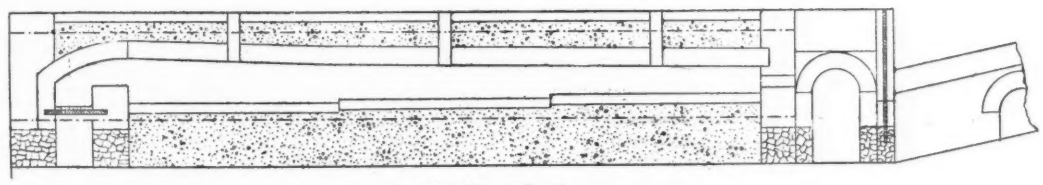
Good flaming wood is essential as a fuel. The charge of concentrates for each hearth varies from 1,200 to 1,500 lbs., according to the proportion of sand contained. This is dropped from the charge-hole at the top into the third or cold hearth, where the moisture and most of the arsenic are driven off. It is then passed on to the middle hearth by means of paddle and scraper, and a fresh charge is dropped on the third hearth. In the middle hearth the sulphur almost immediately ignites, and by frequently raking or combing the ore to expose fresh surfaces copious fumes are evolved, and in from two to three hours most of the sulphur will have been expelled. The charge is then transferred to the first or hot hearth, where the last traces of sulphur, under the influence of higher temperature, are speedily driven off, care being taken to constantly comb or rake the ore, and to avoid excessive heat, which might cause caking. A rough but effective method of ascertaining whether all sulphur has been eliminated is to take a little of the heated ore from the furnace on a small iron pallet and smell it; or to draw a portion of the heated charge to the colder atmosphere of the working door, when, should even only a minute percentage of sulphur be present, small brilliant sparks will be observed spitting from the ore. These tests having proved satisfactory, the charge is drawn, and, having been spread over the cooling floor, is moistened by means of a spray. It is then ready for the amalgamators. It is advisable, especially in the presence of copper ores, to add, say, from 20 to 30 lbs. of lime to each charge before dropping it into the furnace, in order to decompose any sulphates which may be formed.

The amalgamators which the author has found most convenient and effective are the well-known Wheeler pans (which do not require minute description), of a capacity of about 1,000 lbs. of roasted pulp per charge. The Wheeler pan is provided with a false bottom, consisting of 6 segments, which conjointly cover the actual bottom of the pan. These are 2 in. thick, and are set in cement. In like manner the muller is provided with shoes, which serve as grinders, of similar thickness to the false bottom, and both may be easily replaced when worn out. Attached to the inner circumference of the pan are six wings, or curved splash-plates, the object of which is to set up a centripetal motion in the pulp as against the centrifugal motion caused by the revolving muller.

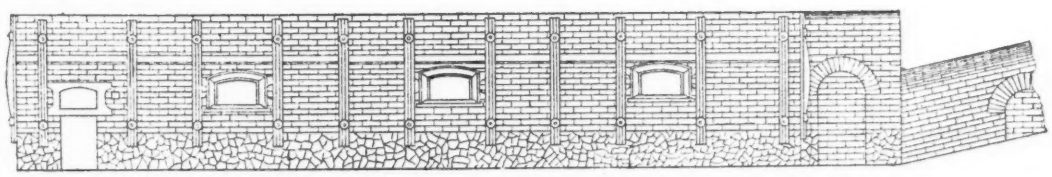


Plan.

Section through A.B.



Longitudinal Section.



Elevation

THREE-HEARTH REVERBERATORY FURNACE FOR ROASTING ORES.

Water is first introduced from a convenient tap to a depth of about 4 in. The muller is then set in motion, and the ore gradually charged to within 2 in. from the top of the wings or splash-plates, and water or ore is then added until a consistency resembling that of mortar is attained. About 20 lbs. of lime, 1½ oz. of potassium bichromate, and 2 oz. of caustic soda should be mixed with the roasted ore before it is put into the pan. The muller is then lowered, and grinding proceeds for from 4 to 6 hours, or until the pulp has been reduced to a state of almost impalpable slime. At this stage the muller should be raised about 1 in. from the bottom, and a quantity of mercury, ranging from 20 lbs. to 50 lbs., according to the gold contents of the ore, is added to the charge in the form of spray by squeezing it through a wet calico bag.

Should all the conditions be favorable to amalgamation, the whole of the gold will be taken up or absorbed by the mercury in about half an hour. To ascertain whether this is the case, a small dishful of the pulp should be taken out and carefully panned. Should amalgamation be complete, no free gold will be seen, and the mercury will be mostly in one bright, rounded, and lively mass, with perhaps a few minute but bright globules, which may be easily collected by friction. On the contrary, should the conditions be unfavorable, the gold, in spite of the presence of mercury, will form an independent head in the pan, and the mercury will be found either in a bright globule, partially coated with heavy particles of ore, or perhaps metallic iron, from the wearing of the grinders, or in elongated, dull, and dirty strips,

which in spite of rubbing will show no affinity for gold. The use of the bichromate of potash is to subdue the evolution of hydrogen gas on the surface of the mercury, caused by the action of any free sulphuric acid which may be present in the pan due to the decomposition of sulphates. The presence of too much circulating hydrogen produces such a violent action (rotary motion) on the surface of the globules of mercury that even gold is rejected by them and thrown off at a tangent, although the mercury would be perfectly clean and bright. On the other hand, in the absence of free sulphuric acid the addition of bichromate of potash sickens the mercury, rendering it dull and sluggish, and therefore unfavorable to amalgamation with gold.

It is obvious, therefore, that the happy medium should be aimed at, that is, to bring about a quasi-quiescent evolution of hydrogen on the surface of the mercury sufficient to render each particle absolutely bright and globular without producing such violent action as to cause it to repel any gold which might come into contact with it. In a word, the presence of a minute excess of acid is necessary to perfect amalgamation. The recovery of floured mercury is rendered practicable by the adoption of this mode of treatment.

The advantages to be derived from the use of the reagents referred to were demonstrated by the following experiments, which were carried out by the author on a working scale some years ago.

1. In the first case a charge of raw ore, consisting of almost clean auriferous iron and copper pyrites, was submitted to grinding for 16 hours, with a carefully weighed quantity of mercury, in a Wheeler pan. The result naturally was that while the ore was reduced to a fine slime, the mercury was broken up into infinitesimal black particles, totally incapable of amalgamating with gold. The muller was then lifted from the bottom of the pan, and a quantity (10 oz.) of bichromate of potash was added to the charge, when the particles or floured mercury soon began to unite and form large globules, which, although active, were still coated with pyrites. On the further addition of 8 oz. of bichromate of potash the mercury assumed the form of elongated sluggish strips of a dirty yellow color. Dilute sulphuric acid was then cautiously added until the mercury became perfectly bright, and after working the charge in this state for half an hour the pulp was run off, and on cleaning up it was found that the gold saved was equal to 82 per cent. of the assay contents, and 96 per cent. of the mercury was recovered.

2. In the second experiment a parcel of blanketings was treated which had been exposed to the weather for some years, and contained 5 oz. of gold per ton. In this case the crude ore was ground for six hours, with 6 oz. of bichromate of potash, before raising the muller and adding 500 oz. of mercury. The mercury became somewhat sluggish, and about a wineglassful of sulphuric acid was poured into the pulp. The result of this experiment was the recovery of 85 per cent. of the gold contents, and 509 oz. of mercury, or 9 oz. more mercury than that weighed into the pan, proving that a portion of the floured mercury previously contained in the blanketings had been collected. There is no doubt that in each case the extraction of gold would have been considerably higher had the ore been roasted, although, of course, at the cost of the mercury recovered in the latter experiment.

3. After some years' running of a 25-stamp mill there was naturally a considerable accumulation of magnetings, that is, iron scraps and dust, due to the wearing of shoes and dies in the mortars, which are separated by magnet from amalgam and pyrites during each clean-up. The gold adhering to the larger particles of iron is easily recovered by heating, pounding, and amalgamation; but that associated with the finer particles and dust, which in this instance amounted to 170 oz. per ton, could not be so easily extracted. The parcel of fine iron grit and dust weighed about 225 lbs. The presence of a very high percentage of metallic iron beads rendered any attempt at grinding out of the question. It was therefore decided to mix this with 1,000 lbs. of pyritic concentrates, and to roast the whole in the reverberatory furnace. The sulphur thus liberated from the pyrites combined with the metallic iron, forming a sulphide of that metal, and this, in its turn, as roasting proceeded, was reduced to Fe_2O_3, which was amenable to grinding, and the gold was consequently liberated. A small quantity of bichromate of potash was added when the pulp was charged to the pan; and, after grinding for 6 hours, the muller was raised and mercury introduced. For two hours, although the mercury remained bright but somewhat sluggish, no amalgamation took place. On the addition of a little dilute sulphuric acid, however, the gold was almost immediately taken up, the actual extraction being 98 per cent. of the assay contents. Here it seems that the bichromate of potash employed was just sufficient to neutralize the free sulphuric acid present in the charge, thus rendering the mercury inactive, although bright; and that the introduction of a minute quantity of sulphuric acid was necessary to set up a slight evolution of hydrogen, when the mercury became lively, and amalgamation directly ensued.

The possible advantage of using bichromate of potash occurred to me while watching some experiments which were being conducted in Melbourne by Messrs. Johnson, Field & Beeman, who patented a process for the recovery of gold by amalgamation about 10 years ago. The essence of their process was to add a small quantity of zinc amalgam to the mercury, and then to act on this by means of permanganate of potash and sulphuric acid in order to produce the hydrogen reaction. Their process was undoubtedly worthy of attention, but they claimed too much in that they wished to obviate even a partial roasting of the ore. And again, the zinc amalgam combining with that of gold was certainly most objectionable. The author has found, however, that, in actual practice, the zinc amalgam may be dispensed with, and also that, under any circumstances, roasting is necessary to insure close extraction.

The use of bichromate of potash is preferable to that of permanganate, as the action of the former is more gradual, and consequently the workman is not so liable to overcharge, and so entail loss of time in remedying the consequences. There is not the slightest doubt that by this method, if properly conducted, some of the most refractory auriferous concentrates (as well as silver ores) may be satisfactorily treated, and that the very finest gold may be saved.

The merits of the process are its simplicity, and the fact that the ore under treatment is absolutely under control until complete amalgamation has taken place. The loss of mercury, too, is reduced to a minimum.

The bichromate of potash is used in such proportion as to regulate the activity of the mercury by controlling the evolution of free hydrogen. Chromic acid is formed in the first place.

RECENT DECISIONS AFFECTING THE MINING INDUSTRIES.

Specially Reported for the Engineering and Mining Journal.

LIMITATION AS TO MINERAL TO BE MINED WILL BE ENFORCED.—Where a lessee was entitled only to mine soapstone on the leased premises, but took out other minerals of commercial value, equity will enjoin the lessee from continuing to mine such substances on the ground that such mining amounted to a continuing trespass.—Verdolite Company vs. Richards (7 Northampton County Reporter, 113); Court of Common Pleas of Pennsylvania.

RIGHT OF LESSEE TO PREVENT WASTE.—A person holding a valid executory oil or gas lease, executed by several of a number of co-tenants, has such an inchoate interest in the land subject to such lease as will enable him to maintain an injunction to prevent a wrongdoer from committing waste by the extraction of such oil or gas, though his own right to explore for oil and gas has not yet been perfected.—Trees v. Eclipse Oil Company (34 Southeastern Reporter, 933); Supreme Court of West Virginia.

LAW OF OHIO REGARDING PLUGGING ABANDONED WELLS.—Under the provision of the law of Ohio relating to the plugging of abandoned gas and oil wells, some act of the owner or lessee must be shown indicating his intention to abandon the well. As long as the casing remains in the well, and prevents water from penetrating to the oil-bearing rock, the penalty under the law cannot be incurred. When a petition regarding such violation of the law is filed, it must appear that the petitioner is a resident of the county where the well is located.—Oak Harbor Gas Company v. State (18 Ohio Circuit Report, 751); Ohio Circuit Court.

SPECULATIVE LEASE UNREASONABLE.—An executory lease which is obtained by lessee through leading lessor to believe that operations would be begun at once to explore for oil or gas, but which is so worded as to become a speculative lease for rental only, capable of being postponed indefinitely, is not reasonable, and will not be enforced in equity. A lease of oil land, containing a surrender clause giving lessee right to surrender at any time and be released from all moneys due and conditions unfulfilled, is void for want of mutuality, and may be terminated by the lessor at any time before its execution by the lessee by operating under same.—Eclipse Oil Company vs. South Penn Oil Company (34 Southeastern Reporter, 923); Supreme Court of West Virginia.

LEASE OR LICENSE OF A MINE.—A party brought an action as lessee of the owners of an undivided one-third interest in a mine, under an instrument which recited that it leased to such party a one-third interest in the mine for one year, the provisions of this lease to be as follows: "The party of the second part hereby agrees to work said mine in a workmanlike manner, and to pay to the party of the first part royalty from all ores taken out . . . from the mine by the party of the second part." The court held that the instrument was a lease granting an undivided one-third interest in the mine for the term of one year, and was not a mere license. Where ousted from operating such interest he had a right to sue for damages based on the loss of profits that he would otherwise have made.—Paul vs. Cragnas (59 Pacific Reporter, 857); Supreme Court of Nevada.

MINERAL COLLECTORS' AND PROSPECTORS' COLUMN.

(We shall be pleased to receive specimens of ores and minerals, and to describe and classify them as far as possible. Also to receive descriptions of minerals and correspondence relating to them. Photographs of unusual specimens, crystals, nuggets and the like, will be reproduced whenever possible. Specimens should be of moderate size and should be sent prepaid; we cannot undertake to return them. If analyses are wanted, and the necessary money is sent, we will turn specimens over to a competent assayer with instructions.—Editor E. & M. J.)

179.—H. C. T.—Garnets and Corundum.—The piece of rock you send is composed almost entirely of a plagioclase feldspar, biotite, mica and pinkish garnets. It does not appear to contain any crystals of corundum, nor does the rock resemble closely the serpentines and peridotites with which the corundum deposits of the Southern States are usually associated. The garnets, however, appear to be well suited for abrasive purposes, but an analysis showing the amount of aluminum oxide present in the rock would be of no value in determining its market value. To determine the percentage of garnet and corundum present a milling test is advisable. The rock must be crushed and the garnet and corundum separated by concentration. For such a test to be valuable 500 to 1,000 lbs. of rock should be sent to a firm that makes mill tests. You will find the addresses of several in our advertising columns. We cheerfully give our opinion on any samples submitted to us, but do not make assays nor mill tests, nor will we have assays or mill tests made unless cash accompanies the order.

180.—Zinc Sulphide Specimens from Joplin.—Mr. Charles E. Hart, of the John Jackson Mining Company at Joplin, Mo., has sent us some beautiful specimens of crystalized zinc sulphide, black jack and resin jack, associated with golden calcite and barite from the John Jackson Mine. Although this mine has produced some beautiful sphalerite and calcite crystals, yet it is by no means a specimen mine, having about the largest run of zinc ore of any mine in the district. The ore body is known to be 850 ft. long, 30 to 50 ft. wide and 20 to 60 ft. high.

181.—Cornudum.—Gabbro.—T. A. S.—Your samples of corundum were probably not received. We say probably because we have received a package having no mark upon it to show by whom it was sent. This package contained 4 pieces of greenish rocks, which apparently do not carry corundum at all. The rocks are probably gabbros. A coarse green and white rock is plainly a gabbro and a fine textured dark green rock is probably a gabbro also. Two rusty-looking specimens probably contained considerable iron pyrites which has weathered to iron oxide. All samples sent us for examination should be separately numbered and all packages containing samples should be plainly marked with the name and address of the sender. We will not examine specimens unless the packages are properly marked.

182.—Pyrites.—T. B.—A compact, fine-grained greenish rock, probably of sedimentary origin, carrying little disseminated aggregates of iron pyrite. The rock looks as though it might carry gold, but an analysis is necessary to determine.

183.—Supposed Tin Ore.—J. A. G.—The specimen you send, a very fine-grained greenish rock, is evidently of igneous origin. Tin ore is nearly always associated with acid igneous rocks, granites, pegmatites, etc. Your rock is evidently basic and is a very unlikely one to contain that metal. The small brownish crystals do not look like tin stone.

184.—Scheelite.—L. G. B. says: "I have on a claim near Lead City, S. D., a ledge of rock showing bands of quartz, soft slate, slikensided slate or talc, hornblende with mica. Some of the "hornblende" is very heavy and when broken the inside is in squares, the outside is generally black but some of the "hornblende" is greenish or yellowish. Is it possible that the heavy substance is scheelite?" In reply we assure L. G. B. that it is impossible for us to determine minerals by indefinite descriptions, but that we will gladly give an opinion on any sample he may send. His mineral is not scheelite. Scheelite is tungstate of lime, and contains when pure 80.6 per cent. of tungsten trioxide. It usually also contains molybdenum as an impurity and sometimes copper. The crystals are most often four-sided double pyramids, but are sometimes tabular. The mineral is brittle, not quite as hard as a steel knife blade, has an uneven fracture and a vitreous to adamantine luster. Its color may be white, pale yellow, greenish or reddish, but the streak is white and the mineral is transparent or translucent. Scheelite is generally found in areas of crystalline rocks and usually with tin ore, topaz fluorite, molybdenite, apatite or wolframite, in quartz veins.

QUESTIONS AND ANSWERS.

(Queries should relate to matters within our special province, such as mining, metallurgy, chemistry, geology, etc.; preference will be given to topics which seem to be of interest to others besides the inquirer. We cannot give professional advice, which should be obtained from a consulting expert. Nor can we give advice about mining companies or mining stock. Brief replies to questions will be welcomed from correspondents. While names will not be published, all inquirers must send their names and addresses. Preference will, of course, always be given to questions submitted by subscribers.—Editor E. & M. J.)

Opals.—Can you tell me where in the United States opals of the best grade are found?—C. W. M.

There is no regular production of the precious opal in the United States at present. Opals have been found at Durkee, Ore.; at Dunsmuir in Siskiyou County, at Yokohl, in Tulare County and near San Bernardino in California. Specimens have been found in Idaho, in Virginia and in Connecticut. In none of the places mentioned have stones been found in sufficient quantity to pay for further working. The chief supply of opals at present comes from New South Wales and Queensland in Australia.

Leaching Low-Grade Copper Ores.—What will it cost me to get instruction on the leaching processes for treating copper ore? I have some that I am told runs $3.20 to the ton in value. It is a clay with a white substance in it, and I would like to know if it can be worked cheaply, by a plant requiring a small capital. I send you a sample of the ore.—E. W. D.

Answer.—The sample of clay or marl carrying copper ore which you sent has not been received. The extraction of copper carbonates from a fine clay is feasible, and the general scheme of such a plant is simple enough, but to treat low grade ore successfully the plant would have to be large and provided with all improvements in machinery. A deposit of low-grade copper ore in your section of Texas would need the supervision of trained engineers and metallurgists. You could not learn how to go to work from reading a book or two, and we think you will encounter nothing but disappointment in trying to develop a deposit that shows no better returns, even in small samples, than $3.20 per ton.

Molybdenite.—I am anxious to know what metallic molybdenum can be sold for and to whom. I notice you quote molybdenum under rare minerals, but I presume these prices are for small lots when reduced to a certain state (chemical). What percentage would pay to ship, say by ton lots? I understand the United States Government is working a mine in Washington at the present time. What uses is molybdenum now put to?—J. B. C.

Answer.—1. There is little or no demand for metallic molybdenum; in that form it is a rare metal, as we quote it. Molybdenite is sold to makers of ferro-molybdenum, which is used in certain special steels. This is the only use at present. The production of molybdenite in the United States last year was 18 short tons. The ore, to be marketable, should run about 56 per cent. Consult the "Engineering and Mining Journal," March 17th, 1900, page 324; May 12th, 1900, page 564. Also "The Mineral Industry," Volume VIII.

2. The United States Government is not working any mine, for molybdenum or any other metal, in Washington—nor indeed in any other State or Territory.

Arsenic Sulphide (Realgar).—Will you kindly tell me where I can obtain information upon the uses to which the sulphide of arsenic (realgar) is put in the manufactures and arts? Is the trade wholly supplied by this country or is it imported? Also the annual production of the same in this country. Also a list of works on the treatment of arsenic ores.—T. H. W.

Answer.—Realgar—arsenic sulphide—is used chiefly in the manufacture of certain colors, and especially for coloring glass. The trade is wholly supplied from Germany, chiefly at Freiberg. None is made in this country. The quantity of arsenic sulphide used is not large, arsenious acid being the arsenic of commerce, which is used in considerable quantities. This is produced in Great Britain, in Germany, and recently in Canada. Realgar is found native in some places in Germany and Hungary.

The best monographs on the treatment of arsenic ores of which we know are those by William Thomas on the manufacture of arsenic in Great Britain in "The Mineral Industry," Volume II.; and by Albert Doerr on the manufacture of white, red and yellow arsenic at Freiberg, Germany, in "The Mineral Industry," Volume IV.

Prospecting and Mining Abroad.—I have been much interested in a recent article on mining in Peru, and would like to go there as a prospector. I would like to ask you:

1. Do you think it advisable for me to take a course in mining and its branches from now to spring to be a successful prospector?

2. Can you tell me any other foreign country that is equally as good to prospect in as Peru?—R. E. B.

1. If you intend to go into mining we should advise you by all means to take a course of instruction, and if you are at present employed would suggest the United Correspondence Schools in New York. You must not expect, however, that one year's course in mining will make you a successful prospector. You will need a lot of practical experience besides. What you can learn from books and schools is a valuable foundation, but it is only a foundation to which practical work must be added before you can expect to succeed.

2. We should not recommend any young man to go to Peru as a prospector. He would find the conditions there entirely different from those at home and would have to learn something of the country, the language, the people and their ways before he could do anything. The Indians, who are the best prospectors in Peru, do not look on the white man with favor unless he can employ them. There are opportunities there, but they are for the man or company with capital, not for the miner or prospector. Much the same may be said of all the South American countries. We may repeat what we have often said, that there is no occasion for a young man to go abroad; the opportunities he can find in the United States are far better than any he is likely to meet elsewhere.

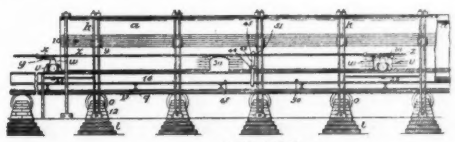
PATENTS RELATING TO MINING AND METALLURGY.

UNITED STATES.

The following is a list of the patents relating to mining and metallurgy and kindred subjects, issued by the United States Patent Office. A copy of the specifications of any of these will be mailed by the Scientific Publishing Company upon receipt of 25 cents.

Week Ending July 10th, 1900.

653,202. ORE ROASTING FURNACE. Philip Argall, Denver, Colo. An ore roasting furnace provided with a reciprocating bottom, longer than

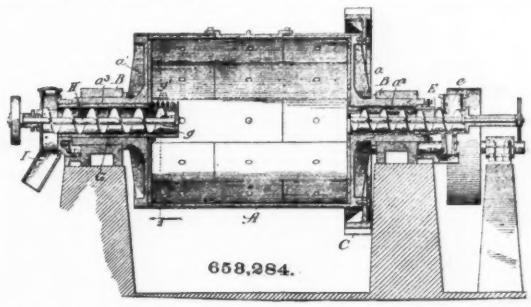


653,202.

the said furnace, and means for moving said bottom back and forth a specific distance equal to said excess of length, whereby the furnace always remains closed at the bottom.

653,205. PLACER MINING DREDGE. Samuel K. Behrend, Washington, D. C. The combination with hollow rollers of a platform having a horizontally-hinged connection with said rollers, and a dredge carried on said platform.

653,284. TUBE OR PEBBLE MILL. Charles L. Carman, Chicago, Ill., assignor to the Gates Iron Works, same place. The combination of a rotatable tubular portion provided with a grinding chamber and an axial discharge opening at one end of the tubular portion, an in-



653,284.

clined screen arranged inside the grinding chamber of the tubular portion adjacent to the axial discharge opening over which the balls or pebbles may pass and through which the ground material may be screened so as to be discharged through the axial discharge opening.

653,206. METHOD OF BURNING PULVERIZED FUEL. John Bole and David R. W. Patterson, Pittsburg, Pa. The method consists in feeding the pulverized fuel into a suitable combustion chamber, suspending said fuel in said chamber upon an underlying blast of an oxygen-bearing fluid, and burning the fuel while thus suspended.

653,261. APPARATUS FOR MAKING AND STORING OXYGEN. Willie Riley, Bradford, and Abram Kershaw, Leeds, England. The combination with the toggle levers of a slide, a lamp carriage, means for engaging the slide and lamp carriage.

653,285. ACTUATING MECHANISM FOR CONCENTRATING TABLES. David Cole, Chicago, Ill., assignor to the Gates Iron Works, same place. Combination of a frame, a sliding bar pivoted thereto, a pair of toggle-links pivotally connected, one connected at the outer end to the sliding bar and the other to the frame; the toggle-links being operated by a lever and crank so as to give vibration to the concentrator.

653,306. TRIPOD AND CLAMP FOR ROCK DRILLS. William K. Millholland, Chicago, Ill., assignor to the Gates Iron Works, same place. Combination, a shaft having threaded ends, a sleeve fixed upon the shaft and constituting a saddle support, a leg having in its upper end bifurcated, its two arms being swiveled upon the sleeve, clamps for locking such arms and sleeve against relative movement, a hip-ring swiveled upon the shaft at each end of and abutting against the sleeve, and a nut fitted to each end of the shaft for clamping the hip-rings against the sleeve.

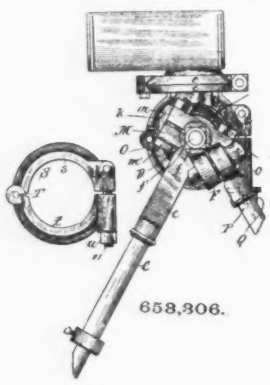
653,307. DRILL SUPPORTING COLUMN AND COLUMN CLAMP. William K. Millholland, Chicago, Ill., assignor to the George D. Whitcomb Company of Illinois. In combination, a shaft, a screw fixed in the block and entering the shaft end, a foot plate upon which the screw is adapted to rest and turn, an annular ratchet formed on the upper face of the plate, a block fixed to the screw, and a pawl secured to the block and co-operating with the ratchet.

653,324. BUCKET CONVEYOR. Gustavus L. Stuebner, New York, N. Y. A filler comprising a box open at one end, with vertical sides and a curved front, a chute formed in one of the sides thereof and a bottom with a portion thereof raised with a smooth curve; a frame, truck wheels, guide barrels, guide sheaves and rail clamps.

653,325. PROCESS OF EXTRACTING PRECIOUS METALS. Charles P. Tatro and George Delius, Seattle, Wash. A process comprising the following steps: First, pulverizing the ore to a fine pulp; second, dissolving the metals from the foreign matter by immersing the pulp in a bath comprising an aqueous solution of common salt, caustic lime, and a small percentage of bromine, fluor-spar and saltpeter; third, recovering the precious metals from the bath by means of electrolytic action.

653,340. APPARATUS FOR SEPARATING METALLIC FROM ROCKY CONSTITUENTS OF ORES. Francis E. Elmore, Leeds, England. The combination in an apparatus for separating metallic from rocky constituents of ore; of a rotary drum having internal helical ribs, pipes for delivering oil and ore and water into one end of said drum, a water-subsiding vessel arranged below the drum and receiving the oil, ore and water therefrom, a centrifugal drum arranged below said water-subsiding vessel, and a pipe for conducting the metallic portions and the oil from the top of the water-subsiding vessel into said centrifugal drum.

653,342, 652,343, 653,344 and 653,345. DIAMAGNETIC SEPARATION. Elmer Gates, Chevy Chase, Md., assignor to Theodore J. Mayer, Washington, D. C.



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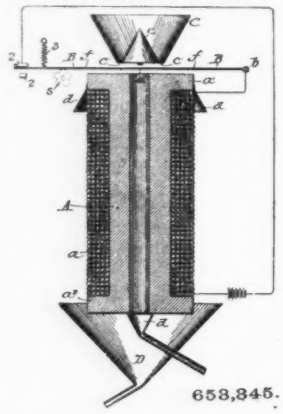


653,345.

The method consists in introducing the mixture into a zone of median magnetic intensity, agitating the mixture while detained in said zone until the particles of varying susceptibility move in opposite directions, and collecting the separated particles and conducting them away separately.

653,346. MAGNETIC SEPARATION. Elmer Gates, Chevy Chase, Md., assignor to Theodore J. Mayer, Washington, D. C. The method of separating from a mixture, particles of conductive material which consists in passing an electric current through a moving body of the mixture, and diverting the conducting particles by causing the moving mixture to pass through an auxiliary field of force.

653,357. COAL JIGGER. James A. Montgomery, Brookwood, Ala., assignor of one-half to Murray S. Hitchcock, same place. In combination, a hinged plunger, a concaved plate adjacent to its free swinging edge, and means for operating said plunger, the compartment having a screen bottom, the coal outlet passage in the vertical wall of said compartment, a rocking gate, an angle lever secured thereto, having a slot in one of its arms, a tilting lever and means for tilting the same, and connections between said lever and the slotted angle lever.

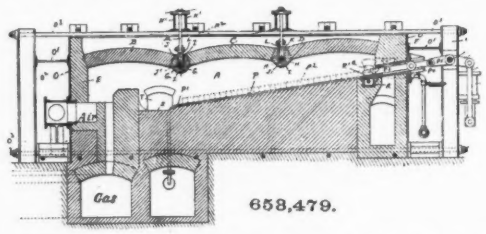
653,413. PROCESS OF IMPROVING ARMOR PLATES. Emil Ehrensberger, Essen, Germany, assignor to Fred Krupp, same place. The process consists in heating the side which is to be hardened to a temperature corresponding to the degree of hardness desired, while heating the other side, which is to become tough, to a heat below that necessary to produce hardening but high enough to produce toughening, and then cooling suddenly only the side which has been heated to the higher temperature.

653,414. PROCESS OF EXTRACTING COPPER OR OTHER METALS FROM TAILINGS OR ORES OF SUCH METALS. Edward Fink, Milwaukee, Wis. The process of extracting copper and other metals from tailings or ores of such metals, consists in subjecting the tailings or ore to the action of a solution containing sulphuric acid and to the action of oxides of nitrogen, in the presence of air or oxygen under pressure, whereby the metal is oxidized and dissolved and the oxides of nitrogen are converted alternately into lower and higher oxides, and finally separating the solution from the earthy matter of the tailings or ore and separating the metal from the solution.

653,444. APPARATUS FOR VENTILATING MINES. Henry Fullwood, North Carlton, Victoria. In combination, a system of pipes having dampers set in the pipes near each junction of two pipes, such dampers having spindles with bearings formed by the flanges of the adjacent pipe lengths, the projecting end of spindle carrying a weight, a cord attached to such weight passing over pulleys, and secured to one end of a lever whereby the dampers are operated.

653,468. METHOD OF RENDERING ANTHRACITE COAL CONDUCTIVE, etc. William J. Burke, Scranton, Pa., assignor of one-half to Henry A. Kaufhold, same place. The method of rendering anthracite or hard coal electrically conductive, or of transforming it into a conductor, consists in heating the same in its natural condition of solidity, in a retort closed to external influences until the impurities are driven off.

653,479. REVERBERATORY FURNACE. Charles H. Morgan, Worcester, Mass., assignor to the Morgan Construction Company, same place. The combination of a pair of vertical and parallel walls, an overhead framework resting upon said walls, an arched roof having



653,479.

the axes of its arches at right angles with said walls and suspended from said overhead framework, whereby the weight of said roofs is received in vertical planes by said walls, a pair of walls forming the end walls of the furnace and arranged to receive the end thrust of said arched roof.

653,480. FURNACE. Charles H. Morgan, Worcester, Mass, assignor to the Morgan Construction Company, same place. A furnace for heating billets having openings at its ends for the admission of billets, tracks extending from the charging ends of the chamber toward a central hearth, a central hearth means for delivering billets from each of said tracks by a sidewise movement, and an opening opposite said hearth and in the side wall of the furnace, for the delivery of billets by an endwise movement, and at right angles to their line of movement over said tracks.

653,481. MECHANISM FOR FEEDING BILLETS FROM THE CHARGING TO THE DELIVERY ENDS OF FURNACE. Charles H. Morgan, Worcester, Mass., assignor to the Morgan Construction Company, same place. In a furnace for heating billets, the combination with a heating chamber provided with a series of restricted openings in one of its end walls, of a pushing mechanism consisting of a series of pushing bars.

653,504 and 653,508. FURNACE. Victor E. Edwards and Jerome R. George, Worcester, Mass., assignors to the Morgan Construction Company, same place. In a furnace for heating billets, the combination with a heating chamber having an opening at one end for the admission of billets, of a track extending longitudinally through said chamber whereon the billets are supported, a transverse wall at the opposite end of the heating chamber having a downwardly-inclined surface, over which said track is continued, forming an inclined section whereon the heated billets move out of the heating chamber.

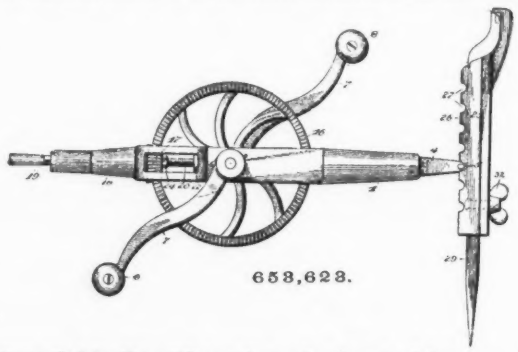
653,515. HOT-BLAST STOVE. Julian Kennedy, Pittsburg, Pa. Checkerwork having intersecting walls formed of bricks of similar thickness, each brick at the points of intersection of the walls having an interlocking projection at each end entering openings in the cross-wall, each projection having a length greater than one-half the thickness of the brick which it engages.

653,533. FURNACE. Frederick R. Sellman, St. Louis, Mo. The combination with a firing chamber in which combustion of the fuel takes place slowly, of a mixing chamber for receiving the combustible gases resulting from the decomposition of fuel in said firing chamber, passages for admitting heated air to the mixing chamber, and a combustion chamber into which the heated air and combustible gases are directed in the burning state from the mixing chamber.

653,538. ELECTROLYTIC APPARATUS. Nathaniel L. Turner, Salmon City, Idaho. An electrolytical apparatus, comprising a tank, a carrier provided with depending arms, an electrode supported by said arms, turn-buttons secured to the arms and adapted to hold the electrode thereon, and an electrode of opposite polarity to the one first mentioned.

653,566. ROLLING MILL. Henry Aiken, Pittsburg, Pa. A rolling mill plant comprising stationary lines of feed mechanism set side by side, and three-high rolls at the opposite ends thereof, said lines of feed mechanism being inclined in opposite directions and set so as to extend respectively between the lower roll-pass at one end and the upper pass at the other end.

653,623. COAL AUGER. James H. Higgins, Whitwell, Tenn. The combination with a frame or stem provided at its outer end with a pair of curved prongs each provided with an outwardly-extending lug, and its inner end formed with an angular extension, of a drive shaft journaled in the said frame or stem, a crank secured to each end of the said shaft, a drive wheel mounted upon said shaft, a shaft



653,623.

journaled in the said angular extension, a pinion mounted on said shaft and engaged by the said drive wheel, a chuck connected to said shaft and adapted to have secured thereto a drill or auger, a channel bar provided with a series of notches adapted to be engaged by the said lugs of the curved prongs for supporting said stem or frame, and an adjustable dagger connected to said bar and adapted to permit the operation of the auger at different inclinations.

653,639. APPARATUS FOR BURNING PULVERIZED FUEL. John Bole, Pittsburg, Pa., assignor of one-half to David R. W. Patterson, same place. In a furnace the combination of a combustion chamber, means for feeding pulverized fuel thereto and means supplying an underlying and fuel-supporting blast of oxygen-bearing fluid into said combustion chamber.

PERSONAL.

Mr. Charles Butters is in London.

Mr. Percy B. McCoy, of New York, has gone to Chile, South America, on mining business.

Mr. Victor M. Clement, it is said, plans to establish permanent office quarters in Salt Lake City.

Dr. Lewis G. Westgate has been appointed professor of geology in the Ohio Wesleyan University.

Mr. C. W. Kempton, of New York City, has returned from a professional trip to Puerto Rico and Venezuela.

Mr. K. G. Brunberg, a mining engineer of Grangesberg, Sweden, is in Colorado to study the methods of mining, and particularly to make a study of electrical mining machinery.

Mr. George Kislingbury, after devoting several days to examining a Nevada mining property, is now in San Francisco. He will probably go to Mexico shortly on a professional errand.

Dr. James M. Safford, who has been professor of geology in Vanderbilt University for many years, has just retired at the age of 70. For a long time he was State Geologist of Tennessee.

Mr. H. H. Miller, who has been engaged for some time past in working El Golfo mines in Nicaragua, has recently returned from that country on professional business, and is now in the United States.

Dr. Stephen R. Williams, an assistant in zoology at Harvard University, has been appointed professor of biology and geology at Miami University, Oxford, O., in place of Professor Treadwell, who has gone to Vassar College.

Mr. Andrew J. Boyle, of North Braddock, Pa., who has been night superintendent at the Edgar Thomson plant of the Carnegie Steel Company for nearly 14 years, will become superintendent of the steel mills of the Dominion Iron and Steel Company at Sydney, Nova Scotia.

Mr. Titus Ulke has just returned to his headquarters at Sault Ste. Marie, Ont., from an extensive and interesting exploration trip to the moose country northwest of Lake Temiscaming, and is now preparing to start on another expedition with the object of examining certain copper prospects north of the Sault.

Mr. F. W. Barnaclo, who has been a practicing lawyer before the United States Patent Office for the past 15 years, has taken offices in the Equitable Building of Baltimore, Md. Mr. Barnaclo has had experience in both the United States and foreign patent practice, as an electrical, scientific and mechanical expert.

Mr. Irving John of El Paso, Texas, has recently finished plans for a 200-ton concentrating plant to be erected at the mines of the Chihuahua Mining Company, Chihuahua, Mexico; also a cable road 1 mile long for the Kansas City Smelting and Refining Company at Sierra Mojada, Mexico.

Mr. Carl S. Fogh, lately with the Arkansas Valley Smelter at Leadville, Colo., has been appointed by the American Smelting and Refining Company superintendent of construction for the large new smelting plant at Salt Lake City. This plant will be erected on the site of the Germania smelter and will contain the latest improvements in all respects. Mr. Fogh has left for his new field of duty.

Dr. T. Kochibe, director of the imperial geological survey of Japan, is examining mines in this country. He will proceed leisurely across the continent, and will spend some time in the Rocky Mountain region studying the geological conditions. After leaving Colorado he will take in the Joplin zinc district and the Michigan copper fields on his way East.

A party consisting of President Schwab, James Gayley, Geo. Lauder and D. M. Clemson, of the Carnegie Steel Company, Judge Jas. H. Reid, president of the Pittsburg, Bessemer & Lake Erie Railroad, and President Thos. Lynch of the H. C. Frick Coke Company, has been on an inspection of some of the connected properties of the Carnegie company. At Conneaut, O., the new dock equipment for ore handling, including the Hulett unloader, was seen at work. From Duluth the party went by special train to the Oliver Iron Mining Company's properties on the Mesabi and Vermillion ranges. On the return trip the yards of the American Shipbuilding Company at Lorain, O., were visited and the party will be present at the launching of the Pittsburg Steamship Company's new steamer "Princeton" on July 27th.

OBITUARY.

Maj. Jules A. Randle, aged 48, died at Eagle Lake, Tex., July 19th. Maj. Randle was interested in the street railway at Monterey, and in mines in several parts of Mexico. He was a native of Virginia, but lived in Texas many years before removing to Mexico.

INDUSTRIAL NOTES.

The Potomac Terra Cotta Conduit Company, of Washington, D. C., recently shipped 16,000 ft. of 2-duct conduit for use by the Havana Electric Railway Company, Limited.

The Premier Tripolite Company, of St. Ann's, C. B., has recently added to its equipment a lot of new machinery especially adapted to meet the increased demand for the company's product.

The American Impulse Wheel Company, of New York City, has secured orders for 3 large water wheel equipments for South America. The same concern is also said to have received orders from Hawaii and Switzerland recently.

The Carborundum Company, of Niagara Falls, N. Y., is making shipments of its specialties to Aberdeen, Scotland, and different parts of Australia. The latter country is said to be the largest buyer. Shipments are about to be made to England, Japan and South America.

Linus G. Read, vice-president and general manager of the Abendroth & Root Manufacturing Company, sailed on the steamer "Deutschland" July 16th, for Hamburg, and will be absent about 2 months. Mr. Read will make a tour of the principal European cities, including Paris. His visit is partly on business and partly on pleasure.

The Pope Tube Works, at Hartford, Conn., were recently shut down permanently by the new owners, the Shelby Tube Company. The reason given for the shut-down is the distance of the plant from the steel and fuel centers, freights being too high, it is claimed, to make the business pay. Once the plant employed about 300 hands.

The recent exports of iron trolley poles have been above the average tonnage. These poles are made at the Morris-Tasker Works in Philadelphia, which have been absorbed by the National Tube Company. Four hundred tons of poles were shipped in one lot to Sydney, while 156 tons went to Newcastle, 57 tons to Glasgow and 9 tons to Genoa.

The Wheeler Condenser and Engineering Company of New York City has secured the contract for the complete condensing plant required for the Portuguese Tramway Company at its Lisbon power station. The company has also secured the order for the cooling tower and condensing plant required for the Bromley, Eng., electric light station and for the condensing sets of the Belfast & St. Helena Corporation electric light station and the Reading Electric Supply Com-

The Compressed Air Company of New York City states that it has acquired 58,992 shares out of a total of 59,506 shares of the stock of the American Air Power Company, and that it also has acquired 19,426 shares out of a total of 20,000 shares of the Compressed Air Motor Company. The management of the Compressed Air Company requests all holders of stock of the American Air Power Company and of the Compressed Air Motor Company to send in the stock still held by them, so that they may have the benefit of the present arrangement.

The C. W. Hunt Company of New York City publishes a neat little pamphlet illustrating a portion of the hoisting and conveying devices it manufactures. The pamphlet is simply intended as an introduction to the general line of machinery manufactured by the company, but it contains information about industrial railway, storage battery locomotives, steam and electric hoists, steeple and parabolic boom towers, Hunt elevators, coal tubs, automatic and cable railways, conveyors, overhead trolleys, blocks, sheaves, wire rope, etc.

The Jeanesville Iron Works Company, of Jeanesville, Pa., through its Denver branch, has received a telegraph order from the American Mining Company, of Wyoming, for 2 improved No. 9 B Jeanesville sinking pumps and 1 duplex station pump. The shops also have an order from the Anaconda Copper Company, Buttte, Mont., for 2 special duplex pumps, and are building a high lift compound condensing pumping plant and 2 improved sinking pumps for a mine in Old Mexico. The Denver branch reports a good demand for the improved No. 9 B sinker and high lift duplex mine pumps.

Alf. J. Swett has brought application in the New York Supreme Court for permission to begin an action in the Supreme Court for the dissolution of the Troy Steel Company, a concern in which Standard Oil capital is said to be interested, and for the appointment of a receiver. Swett, who is a creditor of the company's in the sum of $4,181, asks that such action be taken on the ground that the property is daily depreciating in value through non-use and neglect, and that the loss of creditors will be augmented unless some action is taken for their protection. The company suspended business 2 years ago. Swett alleges in his petition that the company's indebtedness is in excess of $2,000,000.

At a meeting of the directors of the Crucible Steel Company of America at Pittsburg, Pa., on July 25th, the following officers and executive committee were elected: Chairman, William G. Park; president and general manager, Charles H. Halcomb; 1st vice-president, James W. Brown; 2d vice-president, Benjamin Atha; 3d vice-president, Robert E. Jennings; secretary, Frank B. Smith; treasurer, Reuben Miller. Executive committee—William G. Park, Charles H. Halcomb, James W. Brown, Benjamin Atha, Robert E. Jennings, Reuben Miller, Herbert DuPuy. These officers had been decided upon by the incorporators of the new combine about 2 weeks ago, but the details of the combination were arranged before the election took place. The officers will be formally named at a meeting in New Jersey, where the new company is chartered.

The Thornton N. Motley Company of New York City, licensees for Eastern United States and foreign countries for the sale of the Jackson hand-power rock drill, reports the following sales recently: The Columbian National Railway Company, Bogota, Colombia, 2 drills; Spanish-American Railway Company, Santiago, Cuba, 1 drill; Messrs. Van Roosbroek & Company, Brussels, Belgium, 2 drills; H. Glaenzer & Perreaud, Paris, France, 1 drill; Peninsular Railroad of Mexico, Progreso, Mexico, 1 drill; Arthur F. Easton, Perth, West Australia, 1 drill; Secretary of Public Works, Tegucigalpa, Honduras, 1 drill. A number of prominent Eastern corporations, among them the following, have bought drills: Niagara Gorge Railway Company, Buffalo, N. Y., 1 drill; Davis Coal & Coke Company, Thomas, West Virginia, 1 drill; Dayton Coal & Iron Company, Dayton, Tenn., 1 drill. The firm reports for the week ending July 10th having received orders from France, Nova Scotia, Mexico and 2 South American countries.

TRADE CATALOGUES.

The Joseph Dixon Crucible Company of Jersey City, N. J., is sending out circulars calling attention to the merits of Dixon's pure flake graphite as a solid lubricant, and the advantages of using a small proportion of graphite with the regular lubricating oils.

The A. Leschen & Sons Wire-Rope Company of St. Louis and Chicago sends out as a reminder of its business a penholder made to resemble a piece of wire rope finished with socket and hook. It is a neat little souvenir and will doubtless serve its purpose well.

Arnold Bulletin No. 4, published by the Arnold Electric Power Station Company of Chicago, Ill., contains a 10-page description, illustrated by many half-tone cuts, of the Oelwein shops of the Chicago Great Western Railway. The entire equipment for making and distributing heat, light, power and water to the various buildings and yards of this plant was furnished by the Arnold Company.

The Keystone Driller Company of Beaver Falls, Pa., has issued its 1900 catalogue of churn drills and accessories. The catalogue contains 74 large pages and is fully illustrated. The Keystone Company's drills are made in a variety of sizes and patterns. They have long been used for drilling for water or for oil, but it is but recently that their advantages for testing mineral lands, and particularly gold placer deposits, have been fully realized. The catalogue gives all necessary information about the construction, care and use of the drills, and is well worth perusal by any mining man.

MACHINERY AND SUPPLIES WANTED.

If any one wanting machinery or supplies of any kind will notify the "Engineering and Mining Journal" what he needs he will be put in communication with the best manufacturers of the same.

We also offer our services to foreign correspondents who desire to purchase American goods of any kind, and shall be pleased to furnish them information, catalogues, etc.

All these services are rendered gratuitously in the interest of our subscribers and advertisers; the proprietors of the "Enginering and Mining Journal" are not brokers or exporters, and have no pecuniary interest in buying and selling goods of any kind.

GENERAL MINING NEWS.

ALASKA.

Cape Nome.

Reports that came from Nome agree in saying that the boom worked up by the transportation companies is bound to cause great suffering. That part of the beach at Nome from

which so much gold was taken last year has been worked over 5 times. The gold left will not pay better than $1.50 to $3 per day. The beach is piled for several miles with supplies of all kinds that will be swept away by the first heavy storm. Of 500 or more dredging and concentrating outfits that were taken up less than 300 were set up and not over 200 are at work. The effort to dredge the sands below low-water level has so far resulted in nothing but disappointment. The greatest drawback of the region, aside from the wretched climate, is the lack of wood for fuel. The driftwood along the shore is about used up, and coal brings very high prices. There has been some excitement at Topkuk, 60 miles east of Nome. Here 3 streaks of gravel of limited length were found that yielded good returns, but the deposits will be quickly worked out. Attempts to work the tundra are disappointing, and the good creek claims near Nome are not many. The outlook in the Golofin Bay Region is better. There are some really good creek claims there and the gold gravels are quite extensive. Most of the miners will probably make good returns. As for the great majority of the unfortunates at Nome, there is little for them to do but to get home as best they can. Doubtless Government vessels will be called on to bring them back before winter sets in.

ARIZONA.

Graham County.

Arizona Copper Company, Limited.—This company reports that the total production from the mines at Clifton, for the month of June, was 646 short tons of copper.

Mohave County.

(From Our Special Correspondent.)

Redemption.—In the 90-ft. tunnel of this mine owned by Ferguson & Sons, a vertical ore body 2 ft. thick, rich in native silver, has been opened. The ledge also carried black sulphide, copper, iron and lead. The ore heretofore mined was low grade.

CALIFORNIA.

Amador County.

(From Our Special Correspondent.)

Lincoln.—The report of Superintendent E. C. Voorhies, of Sutter Creek, gave the results of the crushing of 1,100 tons of rock from this mine at the South Spring Hill Mine, as $6,129, the free milling being 182.7 oz., valued at $17 per oz., and 39 tons of sulphurets, valued at $77.51 per ton. There was an average loss in the tailings of 58c. per ton or $583 on the lot. The rock was taken from one drift on the 500 ft. Crosscutting is now going on at the 1,200 ft., and a station is being cut on the 650 ft., preparatory to crosscutting on that level to strike the ore body lower.

Calaveras County.

(From Our Special Correspondent.)

Josephine.—Sinking still progresses on a good vein 5 ft. wide at this mine on Indian Creek, ¼ mile east from Esmaralda. A new pump has been put in.

Kern County.

(From an Occasional Correspondent.)

Johannesburg Mill.—A run of about 20 tons of ore from the Little Butte Mine, which is being worked under bond by McMahon & Doolittle, returned almost $2,500.

The last run on Napoleon Mine ore at this mill averaged $240 per ton.

Yellow Aster.—A most successful well has been sunk 400 ft. for water at Gosler, 7 miles from the mine and at 1,500 ft. lower elevation a 6-in. steel pipe is now nearly completed the entire distance and foundations for the pumping plant waiting for the 175 H. P. Corliss engine and Cornish pump for the well and Dean pump at the surface. It is said the company proposes to increase the number of stamps from 30 to 100, having an ample supply of ore in sight, without further development. Oil is used for fuel. As nearly as I can find, the company recovers about $8.50 on the plates and mills everything. About $1.50 are left in tailings. The mill handles 130 tons per day and seldom has any delay.

Mariposa County.

(From Our Special Correspondent.)

Mariposa Commercial and Mining Company.—The shaft at the Pine Tree claims is down 350 ft. below the tunnel level. At the 400 ft. a station will be cut and drifts run. At the Josephine the shaft is down 275 ft. below the tunnel level. The Princeton shaft is down 530 ft. and when the 750 is reached a station will be cut. The 10-stamp mill is ready to start up. At the Mariposa claim a 2½ ft. ledge is being followed on the 275-ft. level.

Placer County.

Pioneer Gold Mining Company.—A plan for the reorganization of this company has been agreed upon and a circular embodying the plan is being sent to the stockholders. The plan was drawn up by a committee of 3 stockholders, 1 of whom was Joseph M. Cox, who opposed the reorganization at the meeting last May. The plan is precisely the same as that upon which the stockholders voted at Helena, Mont., May 31st, except that it provides that 20c. instead of 25c. be paid by present stockholders for having the stock of the present company exchanged into the stock of the new and that 30c. more may be called later. The next meeting will be held at Helena August 16th.

San Bernardino County.

(From Our Special Correspondent.)

Philip H. Sass, of Kansas City, Mo., who is interested in dredging lands on the Arizona side of the Colorado River, is now in the placer district north of Barstow, Cal., prospecting claims located by some of the officials of the Santa Fe Railroad. Some of the ground in the vicinity worked by dry washers is said to yield as high as $50 per day to the man. At present the weather is intensely hot.

Bagdad.—At this mine, south from Ludlow, development work is to be started. Buildings are going up, and a 25-H. P. gasoline is in place. The ore is said to yield good returns. C. Grant is superintendent.

Gold Mountain.—This property, located at the head of Bear Valley, 40 miles east from Victor, now owned by Capt. De La Mar, is being reopened and the new 40-stamp mill will soon be crushing. It is said that the old open cuts show large amounts of ore carying free gold.

San Diego County.

(From Our Special Correspondent.)

Cincinnatti Belle and Kentucky S.—An effort is being made to consolidate these mines located about 1½ miles from Banner. A 938 ft. tunnel driven into the Kentucky S. has unwatered both mines. The Kentucky shaft will strike the tunled at a depth of 190 ft. and the Cincinnatti Belle at a depth of 225 ft.

Shasta County.

(From Our Special Correspondent.)

Afterthought.—The shaft where the present work is being concentrated is down 190 ft. New pumps and other machinery has been ordered. W. McDermott is manager.

Hazel Gold Mining Company.—This company has purchased the Gladstone Mine, 5 miles northeast from French Gulch. The mill will be put in operation and the mine worked on a large scale. The property, which comprises 9 claims, was formerly owned by a Cleveland, O., company, but on account of litigation has been idle for some years.

McKinley.—This claim adjoining the town line of Shasta, is developed by a shaft down 40 ft., and a tunnel in about 135 ft. The ore shipped to the smelter returned $8.50 per ton clear. The property is owned by J. W. Hocking.

Mount Shasta.—This mine, on Clear Creek, is to be equipped with heavier machinery, and operations resumed on a larger scale. The management also contemplates the erection of a smelter, thus saving the haulage and smelting charges. The ledge is 15 ft. wide and is said to yield as high as $25 per ton. F. E. Ware is general manager.

Siskiyou County.

(From Our Special Correspondent.)

W. T. Shurtleff has been sinking a shaft at Shasta River, near Klamath River, on a formation of black rock which assays high in gold. There are no walls or indications of a quartz ledge.

Fool's Paradise District.—Good paying quartz is being taken out of the Old Reeder Mine. Other claims in the vicinity owned by Crooker & Company prospect well. The mill is now operated by water power from the Shasta River.

Trinity County.

(From Our Special Correspondent.)

Brown Bear.—The work on the 10-stamp mill, in course of erection in the lower tunnel, progresses rapidly, and will probably be completed by September 1st. The tunnel is being driven ahead next to the wall. The property is located at Deadwood. C. Dobler is superintendent.

Yellow Rose of Texas.—The second clean-up at this mine on Coffee Creek is said to have been $2,074 for the 10 days' run. Only 6 tons of ore were handled per day. Another tunnel is to be started. G. L. Carr is owner.

Tuolumne County.

(From Our Special Correspondent.)

Siberian.—At this group of mines near Columbia a good force of men are working day and night shifts under the superintendency of F. Reinville. A tunnel is being run and a winze is sunk from the tunnel on the ore chute. The erection of a mill is contemplated.

COLORADO.

Boulder County.

A. B. G. Group.—A new concentrator is to be erected at once near Rico by the owner, J. W. Burns.

Bancroft.—An excellent body of zinc ore has been encountered in this Rico property on Expectation Mountain by King, Ransom & Eder.

B. & M.—At this mine at Ward a new boiler and additional machinery is being put in. The smelting ore is shipped by rail, while the milling ore is hauled to the Giles Mill.

Colorado.—The eastern syndicate which recently took a bond and lease on this mine is pushing development work systematically. Three shifts are sinking the main shaft and are now down 180 ft. A drift to the east of the shaft and along the vein is being run by another shift, who are now in 210 ft.

Copper Ocean.—This claim is reported bonded to New York parties for $20,000. Five men have been put at work by the new company, with George E. Brinker of Ward as superintendent. A larger force will be put on later. The Copper Ocean is located 3 miles from Lyons, up the south fork of the St. Vrain River.

Little Lease.—The company operating this lease report excellent indications for early shipments. Large sums have been expended in developing this property.

Little Maggie.—Good ore has been encountered in this Rico property, carrying lead and silver in large quantities. The ore also carries some zinc, and arrangements are being made for the erection of a plant for separating the values.

Revenge.—This group of claims on Bryan Mountain, near Eldora, is owned by New York and Ohio parties. A recent shipment of ore is reported to have yielded $385 per ton for the first class ore and $190 per ton for the second class. The ore was taken from drifts on the 150 ft. The vein is said to be 4 to 10 ft. wide, carrying a rich streak from 4 in. to 1 ft. thick. The shaft is 180 ft. deep. Thirty men are at work.

Ward-Rose.—Three shifts are sinking the main shaft of this Ward mine.

Clear Creek County.

The Franklin and Lady Franklin.—It is stated that these mines at Idaho Springs have been sold by George and Thomas Riley and John Owen to the Colorado and California Shareholders' Mining and Milling Company for $35,000, and the new owners are in charge. The new company is composed of Iowa men, who are also operating the Crown Point Mine at the head of Virginia Canyon and the Wilkie Mill for the treatment of the Crown Point ores. The Allen Mill on Chicago Creek has been secured also for treating the Franklin ores. The company is changing this mill from stamps to concentration by jigs and tables. The Franklin has a record of producing over a quarter of a million dollars' worth of ore, and is located on Seaton Mountain. W. H. Knowles will be the local manager and for the Crown Point mines and the 2 mills. The long adit from the Silver Age workings will be continued ahead for the full length of the 2 Franklin claims. This adit is showing 5 ft. of pay ore. The property has 2 shafts, 1 of 240 ft. and 1 on the end line of the 2 claims of 100 ft.

(From Our Special Correspondent.)

Massachusetts Mining Company.—Sinking of the Freeland extension shaft has been resumed. It is intended to sink to 900 ft. to connect the various adit levels which were driven from the Freeland up to its own end lines, and which are being pushed into the Extension ground.

Occidental Mining Company.—Sinking at the Harrisburg is under way and it is intended to begin sinking on the Fraction early in August. In the drifts east on the Fraction there is a small streak of high-grade ore averaging $150 per ton.

Sun & Moon Mining and Milling Company.—Sinking is to begin and kept going until the connection with the Newhouse Tunnel is made at a depth of about 2,000 ft. In the drifts to the west at 600 ft. a new ore-body has been cut running 10 oz. gold and 133 oz. silver per ton. The richer streak is 8 in. wide, and with it is 4 ft. of mill ore.

Tropic Mining Company.—Jay Morton of Chicago has been at Idaho Springs planning to run a cross-cut from Buttermilk Gulch to cut the vein at 600 ft., after which sinking below that depth will be undertaken. He is not satisfied as to the vein claimed to be the Tropic in the Newhouse Tunnel.

Custer County.

Bassick Gold Mines Company.—The Bassick Mine at Silver Cliff is reported to be shipping 100 tons of concentrates monthly to smelters.

Dolores County.

B. & M.—A good strike is reported in this mine at West Dolores, about 12 miles from Rico. The strike is gold ore which is said to be very similar to that found in the famous Emma Mine. It is said to be very large, with an unusually good prospect of its being continuous. The mine is owned by David May, of Denver, and E. A. Thayer.

Hinsdale County.

Bachelor Gold Mining Company.—Three carloads of water pipes have arrived for this company at Carson.

Hinsdale Mining and Milling Company.—This Pittsburg, Pa., concern, with Frank Hill, of Lake City, as general manager, has under bond 30 claims at Carson, and is to erect a pyrite smelter with a capacity of 50 tons per day.

Hiwassee.—This company is contemplating building a mill at Lake City.

Lake County—Leadville.

(From Our Special Correspondent.)

Leadville Stocks.—There is no stock exchange here, but thousands of shares of the new companies have changed hands during the past 10 days, many working people investing. The California Gulch Company and the Valentine Company have had a phenomenal sale. Home Extension Company stock, Toledo Avenue stock and several others are also selling well.

Manganese Shipments.—Two hundred to 250 tons a day are being shipped daily to the steel works at Chicago, the principal producers being the All-Right, Last Chip, Seneca, Maid & Henriett, Sixth Street and Catalpa-Crescent. The output will be considerably increased soon.

Greenback.—This company has been paying the Mahala Company to pump the water in the Greenback shaft, but the receiver recently appointed for the Mahala has stopped the pumps and the Greenback Company will put in a fine pumping plant of its own.

Home Extension Company.—This new concern will begin work on its shaft at 2d and Oak streets to catch the extension of the Home Company ore shoots. A number of well-known Boston people are interested.

Last Rose of Summer.—This new enterprise looks encouraging. The original shaft was 460 ft. deep, and is being sunk 3 ft. a day. Eastern capital is back of the enterprise.

New Monarch Mining Company.—The New Monarch shaft is shipping from the upper levels and sinking to catch the copper-sulphide body. A switch is being built to the Lida claim. The principal shipments now come from the Winnie shaft, which is handling 50 tons a day of fine sulphide ore.

Revenue Leasing and Mining Company.—At a meeting at Boston on July 23d it developed that if sufficient money to carry on work is not raised immediately operations must be discontinued and the shaft allowed to fill with water. It came out that the company has 500,000 shares of stock, ½ of which went into the treasury. It was proposed that the 34,000 shares in the treasury be taken by stockholders, pro rata, at 50c. per share. Another suggestion was that the stock of the company be increased from 500,000 to 750,000 shares. It was the sense of the meeting that both plans be adopted. The chairman said the stockholders must help the treasury to protect present holdings.

Tarshish Mining Company.—Having sunk to contact the management returned to the 260-ft. level, where ore was cut, and has cut a station exposing a 10-in. streak of sand carbonates.

Valentine Mining Company.—At 310 ft. porphyry was encountered. No. 2 shaft is down 50 ft. The company sold 750,000 shares of stock at 10c.

Mineral County.

Creede Ore Shipments.—The ore shipments for the week ending July 14th were 102 cars or 1,618 tons.

Ethel & Solomon.—The development work on these claims at Creede is progressing finely. The company recently shipped 500 tons of zinc ore to England.

Judson Tunnel.—Work has been resumed in this tunnel at Creede under the management of G. H. Spring, of Elmira, N. Y., one of the heaviest stockholders in the company.

Ridge.—Work in this Creede mine has been suspended until the company can install a new and larger hoist. The company expects to resume work by August 1st.

Revenue Tunnel Company.—J. H. Wilson, receiver of this company, is making arrangements to begin the work in the tunnel. A contract was awarded to Lee Evans for drilling 100 ft. and the work will begin at once.

San Juan County.

(From Our Special Correspondent.)

Bonner Tunnel.—This crosscut is in 305 ft. and will shortly cut the Abbot vein.

German Oak.—A nice body of galena ore has been exposed in the new crosscut tunnel and shipments are being made.

Joe & John.—Langolf et al. are driving an 80-ft. crosscut to intersect a 60-ft. shaft in which was opened a 11-in. vein of fine galena.

Kendrick Promotion Company.—The Hercules and Crown Prince will be developed by this company this season, both properties furnishing desirable pyritic ores.

London Exploration Company.—This syndicate has several large forces at work on properties on South Cement Creek.

Magnet.—E. E. Amsden et al. have taken a lease and bond on this property and has a force of men breaking low grade ore.

Mastodon Gold and Silver Mining Company.—Manager Graham is erecting a 50-ton stamp mill to handle the production of this mine in Needles Gulch, near Silverton. The Mastodon is a Boston company.

Minnehaha.—L. Vota has secured a lease and bond on this property and will start work extensively at once.

Natalie Mining and Milling Company.—This Silverton company has purchased for $10,000 cash the Silver Ledge, Silver Ledge Extension and Klondyke claims, and now owns 15 connected claims on the same vein. The group has been developed by a 400-ft. tunnel, showing high silver and lead values. Returns from carload lots gave an average of $41.60 above all expenses. The company also acquires an exclusive water right in Lake Natalie, guaranteeing a continuous supply of water at all seasons. A 400-ft. tunnel has been started which will cut the vein at a depth of 2,000 ft. The tunnel is 6 x 7½ ft., with a 2-ft. drain in the center. James Lewis will superintend operations.

Oro Group.—Work was resumed June 20th on this property above Gladstone. A cross-cut is being run from the old workings to cut the main lead.

Pride of the West.—A force of miners has been installed at this Silverton property and the Howardsville Mill is being put in shape to treat the ore.

Queen Anne.—J. C. Penrose recently completed a 200-ft. crosscut, which topped a large body of high-grade silver-lead ore. Shipments are made to the Red & Bonita Mill at Gladstone.

San Juan Gold Queen Mining Company.—This company is preparing for active work on its properties on Bonita Mountain. The 60-ft. tunnel run last fall will be continued on a 3-ft. vein which yields fair returns.

Silver Crown.—A contract for driving the tunnel 200 ft. further has been let by the owners and work has already begun.

Silver Ledge.—A new upraise has been driven 100 ft. on the vein and shipments resumed.

Sultan.—All the employes of this company have been put to work on the new flume from Animas River, pending the completion of which the properties and mills have been closed.

Teller County—Cripple Creek.

(From Our Special Correspondent.)

Doctor.—From all accounts this property is a good one. The output of the lease held by Josiah Winchester is given as 50 tons a day of smelting ore, with frequent pockets of very rich ore, and the value of the output since last October is put at $1,000,000. The mine is owned by Messrs. Cone & Robinson, of Canyon City.

Eclipse Consolidated Gold Mining Company.—This company recently purchased a double friction hoist, with cylinders of 10 by 12 in., from Hendrie & Bolthoff, of Denver. Besides the company work, parts of the ground are worked under lease. The company owns the Eclipse lode situated in Requa Gulch and running up on to Battle Mountain, where was one of the first strikes in the district.

Gold Coin Mining and Leasing Company.—Work is progressing rapidly on the new hoisting plant. In the meantime the mine is producing about 100 tons of ore per day, about 25% of which is smelting ore, the balance going to the mill. This is one of the great properties of the camp.

Ingham Consolidated Gold Mining Company, Limited.—The Raven lease has been declared forfeited, but for just what cause is not known. It is understood that the lessees will contest this forfeiture.

Stratton's Independence Mines, Limited.—It is understod that a suit for $5,000,000 has been filed against this property by Dr. Milton, of Cripple Creek. The suit grows out of a contract made between outside parties and the former owner of the Wilson Creek Placer, with regard to a certain interest in the placer. This placer was afterward sold to Mr. Stratton and was put by him in the English corporation. It is alleged that a large amount of ore has been extracted from the part of the Wilson placer in contest.

IDAHO.

Blaine County.

Minnie Moore.—A company of Chicago men in which two local men are interested, has acquired this claim near Hailey and a controlling interest in the Relief claim adjoining. The new company proposes to push development work vigorously.

Pass.—This group of claims near Hailey will, it is said, be held and operated by Henry Aplington of New York City, who has been interested in the Tamas No. 2, Fortuna Mining Company, G. V. B. Mining Company and other ventures.

Elmore County.

Lison.—At these mines at Rocky a large force of men is opening up new ground and getting out ore to keep the Commonwealth Mill busy, about 15 tons every 24 hours. Grading for the new 20-stamp mill is under way and it may be ready by September 1st.

Shields.—At this Rocky Bar mine, Superintendent Phelan recently opened a 6-ft. quartz ledge that assays well. The cyanide works at the stamp mill will be ready in 2 weeks.

Idaho County.

Great Eastern.—Philadelphia men have a bond on this property near Dixie and are pushing development work.

Owyhee County.

Cumberland.—The work at this mine, near Silver City, of installing the new machinery is completed. The new Fraser & Chalmers hoisting engine has a shaft 22 ft. long. It was made by Fraser & Chalmers, and is known as the "De Beers" pattern. It is a cross-compound Corliss, with steam brake, capable of hoisting a load of 5 tons at the rate of 2,000 ft. per minute. The big air compressor is also of the cross-compound pattern and will furnish power for 10 machine drills besides several pumps. The new shaft has a pitch of 77½° to the east and has 2 4 by 4 compartments. One side will be used entirely for hoisting, and the other will contain the ladderway, ventilating pipes, compressed-air line for pumps, drills, etc. The gallows frame is 56 ft. high above the collar of the shaft, and will contain ore bins, where the rock is dumped by self-dumping skips. A swinging apron (operated by the engineer at the hoist) will throw the waste rock as hoisted to one side of the ore bin into a car for tramming over the dump. The plant will be the largest and most complete ever installed in Southern Idaho.

Trade Dollar Consolidated Mining Company.—The company is constructing an electrical power plant at Swan Falls, on the Snake River, about 10 miles above Guffey, as projected some years ago by Mr. Hutchinson, superintendent of the Trade Dollar Company. A rock island, about 300 ft. wide, stands in the center of the river, affording ample abutments for a dam. As the river is about 1,200 ft. wide here, each of the 2 portions of the dam will be about 450 ft. long. On the right-hand channel the dam is to be of solid masonry. The spillway will be through the left-hand channel where a rock filled crib dam will be constructed, giving a permanent head of 17 ft. and furnishing 12,000 H. P. At the present time only 2,000 H. P. will be installed, which will be used by the Trade Dollar Company at its mines in Silver City.

A. J. Wiley of Boise is chief engineer. Thomas T. Johnston of Chicago, who had charge of the drainage canal for the city of Chicago, is consulting hydraulic engineer, and L. B. Stilwell, of New York, managing director of the Niagara Falls Power Company, consulting electric engineer.

The electrical machinery is being furnished by the Westinghouse Company, of Pittsburg, and the hydraulic machinery by the Morgan, Smith Company, of York, Pa. The Mountain Electric Company, of Denver, Colo., is putting in the electrical equipment. About 1,400,000 lbs. of cement and 600,000 ft. of lumber are being used in the construction of the dam.

At present about 50 men are employed, but when the water reaches a lower level and actual construction upon the dam commences, 200 men will be engaged upon this enterprise. It is fully expected that the plant will be in operation on January 1st, 1901.

Shoshone County.

It is reported from Murray that 2 galena strikes have been made recently on Bear Gulch.

Amador.—At this property the saw mill has been running several days getting out lumber for the flume and for the concentrating plant. Development work in the mine continues. Several carloads of shipping ore are on the dump and a little was packed to Iron Mountain some time ago.

Coeur d'Alene Mining Company.—This company has a hydraulic elevator at work on Pritchard Creek, 1 mile below Murray, the first plant of the kind erected in northern Idaho. The water for both elevator and giant, which loosens the gravel, comes from the 22-in. pipe line of the Spokane Hydraulic Mining Company. The elevator is furnished with a 15-in. supply pipe, which is reduced to a 5-in. nozzle where it empties the water into the 13-in. discharge pipe. The feed pipe is parallel with the discharge. The two stand at an angle of but 10° from the perpendicular.

The end of the discharge pipe is about 16 ft. above the surface of the gravel, which height is diminished to 10 or 12 at the end of the 150-ft. flume in which the gold is caught. At the head of the flume is a steel-lined hood into which the discharge pipe empties, and the riffles in the flume are made of steel rails. The water in the pipe line has a pressure of 65 lbs. per in. The elevator handles 1,500 yds. a day.

The elevator is located just below the mouth of Dream Gulch, and near the opposite side of the bottom. Charles H. Cole, one of the principal

Boston stockholders, is looking after the work; Barry N. Hillard, who was the principal in floating the company and securing more than 15 miles of the creek bottom and side gulches, is also on the ground. The work is under the supervision of R. L. Gore, who was last in charge of an elevator at Oroville, Cal.

MICHIGAN.

Copper.

Arcadian.—It is announced that the company will at once start work on a new 3-compartment shaft on the Mesnard epidote lode on the St. Mary's property. The principal work now in progress is at shafts Nos. 1 and 2.

Copper Range.—C. J. Johnson has taken a contract to construct 8 miles of road for the Copper Range Railroad Company, from a point about 1 mile south of the junction with the Atlantic & Superior road at Atlantic, over to the Baltic, the Trimountain and the Champion mines and out to the main line again at Painesdale, much of it to be double tracked. The right of way is all secured and the line located. It will be a heavy piece of work, some of the cuts being 50 ft. deep and considerable rock being encountered.

Iron—Marquette Range.

Beaufort.—This mine, in Baraga County, the most western of the Marquette Range mines, has been transferred to a firm mining on the Menominee Range, and G. W. Woodworth put in charge. The mine is all ready to start shipments and it is said that the working force will be considerably increased.

Baraga County.

Hathaway Graphite Company.—R. Hathaway, who for nearly 11 years has been connected with the Detroit & Lake Superior Graphite Company, has organized a new company, to be known as the Hathaway Graphite Manufacturing Company, which has leased the old Duluth, South Shore & America round house, near the station at L'Anse and will take power from Fall River. The machinery for the mill will be put in as soon as the building is ready. To start with, one 4-ft. and one 6-ft. pulverizing machine will be used.

The company has bought 80 acres of land in section 16, T. 49, R. 33, about 1 mile south of the old Taylor iron mine, which contains a large deposit of the best amorphous graphite. The ore will be loaded on cars at the Taylor and brought to the mill at L'Anse, making a haul of only 5 miles.

MINNESOTA.

(From Our Special Correspondent.)

There is a slacking of ore shipments, and no wild tonnage is wanted. The June business will not be reached in July, but the total for the season to August will still be very far ahead of any year before.

Iron—Mesabi Range.

(From Our Special Correspondent.)

It is understood that a deposit of fine-grade ore has been found near Virginia under 80 ft. of taconite. The discovery is important, if true.

Clark Iron Company.—At this mine 10 men were killed and 3 injured by the explosion of 6 boxes of 40% dynamite in the powder room underground. The cause of the explosion is unknown, but it must have been gross carelessness. The mine was not very badly injured. There were 38 men underground at the time. The Clark is owned by the American Mining Company. The accident was the worst in the history of Minnesota mines.

Lake Superior Consolidated Mines.—The case of W. R. Burt vs. this company has been settled out of court, and both parties are evidently satisfied. Mr. Burt gets an increase of minimum from 20,000 to 200,000 tons, and the company a decrease in royalty from 30c. to 25c. The Hibbing leases of this company now stand as follows:

Mitchell Explorations.—In the n. e. ¼ of section 28, T. 58, R. 20, Messrs. Fay, Chisholm and Mitchell have found ore in 2 or more pits, running up to 65% iron and down to .035 to .050% phosphorous. The discovery is one of the best for its size made on the range. There are 80 acres in the exploration, which joins the Pillsbury lands and Clark Mine to its west and the new Corrigan Mine, Monroe, to the east. The work is to be pushed vigorously. A 1/3 interest in this lease sold shortly before the strike for $1,000.

It has been reported in Duluth newspapers that standard Mesabi Bessemer ores have been offered on Cleveland docks at $3 a ton, but your correspondent can find no basis for such a report. Neither is there truth in the statement that all Mesabi explorations are ceasing, but it is true that speculative explorers are finding a poor market for bodies of ore under lease, especially if these bodies are not of high grade. The situation will rest with quality, for vast deposits of low grades are now known to exist.

The Alworth, Hull and Boeing leases, including the Hull and Sellers mines now open, and the Hibbing townsite and lot 2, section 31, T. 58, R. 17, explorations, 300,000 tons per annum; the Burrows, Rust and Goff leases, including the Rust mine and added lands in sections, 1, 2 and 12, T. 57, R. 21, and in 35, T. 58, R. 21, 200,000 tons per annum; the Burt leases, including the Burt mine and 1,200 acres along the ore formation in T. 58, R. 20, 200,000 tons per annum. The opened mines are all at Hibbing, and belong to lumbermen. The leases run till 1950. The royalty is 25c. a ton. In the same vicinity the company has the Day lease, the Pillsbury lease for 100,000 tons a year, and the Pillsbury fee and other lands, lease and fee.

Ohio.—Stripping has been discontinued for the present. The mine has begun shipments again.

Oliver.—This mine is stock piling a large quantity of low-grade ore that it cannot throw away under its contracts, but cannot afford to ship. There are now 6 large stocks of this ore, and it covers much of the ground between the mine and the village. The night mining crew will be taken off in a few days.

Biwabik Group.—This group of mines is running somewhat under check, and the number of active properties is diminished.

Roucheleau.—This property, the east ½ of the n. e. ¼ of section 17, T. 58, R. 17, is now a part of the Consolidated group, an undivided half interest belonging to the Oliver Company having just been sold the former for $500,000. It already owned the other half, at a total cost of about $450,000. The mine is a large one, and was explored 4 years ago by the Consolidated on an option for purchase at $1,250,000. It is supposed to contain 20,000,000 tons of merchantable ore, and much of the property can be mined by steam shovel. It is not likely to be opened for some time.

Sharon Iron Company.—Drake & Stratton have begun work on a 400,000 cu. yd. stripping contract and will operate 2 steam shovels and some 200 men. Large camps have been built and the machinery is on the ground. The Sharon will not probably ship any quantity of ore this year.

Stevenson Iron Company.—This company has let a contract to Drake & Stratton for removing 1,000,000 cu. yds of earth and over-burden. The work will not begin in a large way for some time and will require several years.

Vermillion Range.

(From Our Special Correspondent.)

Mahoning Ore and Steel Company.—This Company has taken a drill into section 35, T. 63, R. 13, and is working there for ore.

MISSOURI.

Jasper County.

(From Our Special Correspondent.)

Joplin Ore Market.—The output is still greatly below the capacity of the district and will continue to be until there is a decided increase in the price of top grade zinc ore. For the past 2 or 3 weeks market conditions have slowly bettered and the ore buyers are picking up all the surplus ore in sight until the very small amount left in the bins is of the poorest quality and even that commands much better prices than were dreamed of 4 or 5 weeks ago. All grades of zinc ore were in demand last week at better prices, and although the sales and the value decreased as compared with the preceding week, much better prices were paid. The price for 60% zinc ore was $28 per ton and several lots were sold at this figure against one lot the previous week. Lead sold all the week at $21.75 per 1,000 lbs., the same as the previous week.

Following is the turn-in by camps of the Joplin district for the week ending July 21st:

	Zinc, lbs.	Lead, lbs.	Value.
Joplin	1,819,400	391,400	$32,616
Galena-Empire	1,343,860	79,280	18,521
Carterville	856,730	232,170	16,188
Webb City	538,790	38,490	6,841
Central City	146,290	16,740	2,266
Belleville	371,200	6,960	5,203
South Jackson	61,820	3,720	885
Cave Springs	138,290	11,720	1,753
Oronogo	898,060	.....	11,823
Aurora	1,080,210	36,720	11,000
Duenweg	53,580	49,040	962
Granby	283,190	24,060	3,200
Neck City	91,140	. .	1,230
Carthage	64,200	.....	899
Carl Junction	47,410	.....	640
District total	7,797,170	885,960	$114,127
Total 29 weeks	272,536,580	31,702,010	$4,704,423

During the corresponding week last year, top grade zinc ore sold for $44.50 per ton and lead at $27.50 per 1,000 lbs. The sales were greater than this year by 979,940 lbs. of zinc and 77,730 lbs. of lead, and the value was greater by $81,213. For the first 29 weeks of last year the lead sales were less than this year by 5,520,910 lbs., but the zinc sales were greater by 20,855,140 lbs., and the value was greater $1,626,592. As compared with the previous week, the sales show a decrease of 411,440 lbs. of zinc and 35,940 lbs. of lead, and $3,494 in value.

Transactions in mines and mineral lands are extremely light and no sales of any size were recorded last week.

MONTANA.

Broadwater County.

Broadway.—About 3 months ago the sale of this group of mines at Neihart was announced and there has been much speculation as to the price secured. It is understood that the transfer of the property has been made and there has been filed, however, an agreement by which John E. Searles of New York City, under date of June 17th, agrees to sell the property to Charles D. McClure and L. S. McClure in consideration of $50,600. Charles D. McClure is a resident of St. Louis, interested in the Bi-Metallic, Granite Mountain, Diamond R. and other Montana mining companies. L. S. McClure of California is resident manager of the Diamond R. at Neihart.

It is understood that a tramway will be built between the Broadway group and the Diamond R. concentrator.

Orphan Boy.—A lease and bond has been taken by Frank Esle and David Wood on this claim, located on one of the tributaries of Beaver Creek, 3 miles west and south of Winston. The property is owned by George Uffel, who has worked it for several years for shipping ore, allowing a large quantity of milling ore to accumulate on the dump. The bond is for $20,000 and to run 3 years, 10% royalty to be applied on the bond. There are 3 distinct leads showing on the surface, dipping toward each other. The ore is free milling above water level and will, it is said, average about $12 per ton in gold. Men have been put to work, and at the 50-ft. level a streak of $50 ore is reported discovered. The shaft, now down 90 ft., is being sunk to the 150-ft. level at once. The mill will have 10 stamps and be equipped with concentrating tables.

East Pacific.—A car-load of rich ore has just been shipped from this mine at Winston. The ore was taken from a block of ground in No. 2 Tunnel and carries high values in gold and silver mixed with lead and iron.

Snowshoe.—This mine and concentrator near Neihart has closed down. The reason given is that a new concentrator of much larger capacity is to be built.

Lewis & Clarke County.

Montana Mining Company, Limited.—The June output was 2,570 oz. gold and 11,700 oz. silver from 4,300 tons of ore and 12,356 tons of tailings. The estimated realizable value of the produce of crushings is $20,300, and of tailings, $37,700; total, $58,000. The treatment of 12,356 tons of tailings cost $13,575, and the total expenses were $41,400, leaving an estimated net profit of $16,600.

Madison County.

General Shafter.—Thomas H. Teal of Twin Bridges has resumed work on this lode, in Butcher Gulch, opposite Summit. Three men will be employed, and the cross-cut tunnel, now in 170 ft., will be driven ahead to cut the lead 70 ft. further in, at a depth of about 170 ft. The General Shafter is an extension of the Keystone, from which a great deal of money was taken in the early days of the camp, but which has been idle for years.

Largey Mill.—James Whittaker has this mill running full blast, with 10 stamps dropping on Bamboo Chief ore. He has about 100 tons of ore out ready for treatment. Five men are employed at the mine.

Raspberry Mining Company.—C. P. Newell, general manager, reports recent strikes in this claim in Dry Gulch of good gold ore.

Red Bluff Gold Mining Company.—At this company's mines at Red Bluff at present nothing is being done but development work. A shaft is being sunk, that is now down 250 ft. and this will be sent down to 300 ft. when a cross-cut will be made. There is fine ore exposed at the 200 level and in sinking the shaft a fine vein, 12 ft. wide, was encountered at 230 ft. The company is employing 30 men and has on the dump 4,000 tons of ore taken out in development which has been sampled by 4 different assayers and is said to average $17 per ton. The company will start building a 60-ton concentrator in a few weeks and expect to have it running within 4 months. George D. B. Turner is manager, Hector Pagnuelo president and Thomas E. Fee vice-president of the company. Messrs. Pagnuelo and Thomas reside in Montreal.

Silver Bow County.

Minnie Healey.—E. H. Wilson, receiver for this company, recently filed a suit against the Boston & Montana to quiet title to ore bodies lying beneath the surface of the Gambetta and Piccolo claims, owned by the defendant company. He claims that they apex in the Minnie Healey, and asks that the defendants be restrained from working them until the case is decided and that he may at all times have access to the workings of the defendant through the Leonard shaft. Judge Clancy issued a temporary restraining order.

Speculator.—The new shaft at this Butte mine

is now 1,030 ft. and connections have been made with every level. The Webster, Camp & Lane hoist, formerly at the High Ore, has been set up. The ore is hoisted in double deck cages, each car holding a ton. The concentrating ore is shipped to the Colorado smelter and the smelting on the Golden Reward smelter at Deadwood, S. D. A new steel gallows frame and 4 boilers of 150 H. P. each are in place. Nearly 150 men are employed, W. Wilson being superintendent. Every one of the men is insured, both against accident and death, by the Speculator company.

NEVADA.

Lincoln County.

(From Our Special Correspondent.)

De La Mar.—Capt. De La Mar, with his general manager, Mr. Cohen, were at the mine July 18th. Both mine and mill were thoroughly inspected and the captain spoke in laudatory terms of the way Superintendent Swindler has conducted affairs. To-day the mine promises a longer lease of life than when he took charge, after maintaining a production of 9,000 tons per month. There are 400,000 tons of tails, which are to be treated. It is likely that April Fool will be absorbed by the De La Mar in the near future.

Storey County—Comstock Lode.

Overman Mining Company.—At the annual meeting last week the following were elected directors for the ensuing year: W. G. Morrow, J. P. Martin, A. S. Groth, W. E. Sharon and George D. Edwards. W. G. Morrow was elected president, George D. Edwards secretary and A. Lackey superintendent. The company has a balance of $695.47 on hand.

Savage Mining Company.—At the annual meeting last week the following directors were chosen: George R. Wells, Charles H. Fish, H. Zadig, H. B. Goodwin and William Bannan. The officers subsequently elected are: George R. Wells, president; Charles H. Fish, vice-president; John W. Twiggs, secretary, and H. M. Gorham, superintendent. The Nevada Bank is the depository of the company's funds, of which there are $3,955 now on hand.

Union Consolidated Mining Company.—At the annual meeting last week 95,332 of the 100,000 shares of capital stock were represented and voted unanimously for the re-election of the old board of directors, composed of Charles H. Fish, Charles Hirshfeld, A. G. Gurnett, William Bannan and A. F. Coffin. Charles H. Fish was re-elected president; Charles Hirshfeld, vice-president; A. P. Swain, secretary, and A. C. Kyle, superintendent.

NEW MEXICO.

Colfax County.

Lynch.—This ditch, which carries water from the Red River to the Moreno placer mines, at Elizabethtown, is to be sold next month at a Sheriff's sale to satisfy a judgment and costs aggregating $7,000. The ditch, crossing 42 miles of rough mountains, was built by New York capital 30 years ago at an expense of $200,000.

NORTH DAKOTA.

Lignite Deposits.—R. M. Haseltine, ex-mine inspector of Ohio, has been inspecting lignite deposits in this State at the solicitation of Senator Washburn, who was anxious to have the fields of lignite examined. Near Wilton, a station on the Bismarck, Washburn & Great Falls Railroad, Mr. Haseltine, it is said, found the lignite to be of good quality, but it is very susceptible to weather and disintegrates when exposed any length of time. For this reason it will have to be made into briquettes, although it can be used with a blower.

Molasses is used as a binder for the fine coal or dust; about 30 lbs. of molasses to a ton of coal are needed.

The lignite in the Ecklund Mine is reported hard and firm and is the best in that section of the country. Drill holes on the large territory adjoining have found plenty of coal. The veins range from 10 to 12 ft. thick. Specimens of the lignite from the different mines, and from drilling have been taken to Columbus, O., for a thorough examination.

OREGON.

Grant County.

Richmond Mining and Milling Company.—This company, owning some valuable claims near the Bonanza in the Geiser District, has, through E. L. Le Clare, its manager, purchased the 10-stamp mill now on the Don Juan property, and will at once have it removed to its own property and put in operation.

PENNSYLVANIA.

Anthracite Coal.

The Philadelphia & Reading collieries in the Pottsville and Shamokin districts worked 3¾ days last week, while the Ashland, Mahanoy City and St. Nicholas district worked 5. The collieries did the same this week.

The Lehigh Coal and Navigation Company's collieries in the Lansford district worked 6 nine-hour days last week, and will continue on this schedule for the next 3 months. This is the best time worked for years.

Ground was broken last week for a mammoth breaker at the new Lytle shaft, Primrose. A large force of men is engaged on the excavation. It is said that the breaker will be one of the largest in the anthracite region, and will be equipped with the latest machinery.

The collieries about Pottsville are beginning to feel the effects of the continued drought. In the St. Clair District, unless a copious rain is soon forthcoming, several collieries will have to shut down completely. The Mt. Hope Colliery has exhausted the water supply at its stripping, and is being furnished with water from Silver Creek Dam. Broad Mountain is compelled to shut down the New Castle Colliery every day at noon on account of the scarcity of water.

Butler.—This breaker at Pittston burnt down on July 19th. The fire is thought to have been of incendiary origin, as the men have been on strike nearly a year and caused a riot some weeks ago. The loss is put at $100,000.

Grassy Island.—These collieries of the Delaware & Hudson Company at Olyphant have shut down, throwing out 1,600 employees, owing to the strikers demanding a settlement on the basis similar to that given the Providence strikers a month ago.

The present trouble is said to go back to when the drivers and runners at the Marvine claimed their wages were cut without any notification, and they went on strike, finally bringing out the employees of the Dickson, the Leggett's Creek and Von Storch mines in sympathy. After conferences a satisfactory settlement was supposed to have been effected with General Superintendent Rose, and the strike ended. The contention now is that the company has not fulfilled its part of the agreement in restoring the wages cut, or paying the wages received before the cut was made. The seven mines of the company where dissatisfaction exists are in North Scranton and Olyphant, and are the Eddy Creek, the Grassy Island and No. 2 at Olyphant, and the Leggett's Creek, the Marvine, the Dickson and Von Storch slope and shaft in the Providence section. Together they employ about 4,000 men and boys.

Mt. Pleasant Coal Company.—Damage suits in which the claims aggregate $45,000 have been instituted against this company by the heirs of Thomas W. Williams, William Gilbert and Francis Woodward, who were killed by the fall of a carriage down one of the shafts of the company at Scranton.

Bituminous Coal.

Bedford Coal and Iron Company.—The property of this company, which was organized with a capital stock of $150,000, and on which bonds amounting to $144,000 had been issued, was recently sold for $14,700 to Patrick F. Duncan, of Duncanton.

Caledonia Coal Company.—A payment of $50,000 has been made toward the purchase of the coal land owned by this company in Clearfield County, and the remainder is ready to be paid over as soon as the papers can be executed for the transfer of the property.

Cowansville Coal Mining Company.—This company has purchased 1,000 acres of coal land and has 2 gangs of men at work driving entries and grading tramways. The miners will give employment to 300 men and the output will be 600 tons daily. The company has contracted to coal the locomotives of the Buffalo, Rochester & Pittsburg Railroad and expects to dispose of the balance of the output in Butler and New Castle. The Cowansville Mining Company is composed of John L. Murray of Mosgrove, John C. Baker of Kittanning and Jacob Merwin of Adrian, all of whom were connected with the Pine Creek Coal Company of Mosgrove, the oldest coal mining company in the Alleghany Valley, which recently sold out to the Pittsburg Plate Glass Company for $50,000.

Midland Coal Company.—A large force of men is at work at Houstonville building the branch road for this company. Entries are being sunk, tipples, etc., put up, and it is expected that within a few weeks the mines will be in operation.

Monongahela Consolidated Coal and Coke Company.—This company is preparing to put in electric mining systems for all its mines in the neighborhood of Dravosburg, Camden and Streets Run. The plant will be located, it is said, in Buttermilk Hollow, Mifflin Township. The mines at Dravosburg formerly belonged to S. S. Crump & Company, those at Camden to George Lysle, and those in Streets Run to the Hays estate. Pick mining has been found unprofitable in comparison with the machines and the mines are to be put on a more profitable basis. They will be lighted with electricity. The railroad combine, which controls all the mines in the railroad district, is preparing to put in machines and the pit mule will give way to the electric mine locomotive.

(From Our Special Correspondent.)

Another branch from the Pennsylvania road will have to be built to accommodate the Continental No. 1 coke works on the Baily Dawson farm just south of Uniontown.

Bigley-Cruthers Company.—This company, which recently purchased 225 acres of land at Lavenia, near Dawson, has put a large force of men at work on the brick plant and a daily capacity of 60,000 high-grade silica brick after September 1st is expected. A test well is to be sunk for gas. A. E. Bradley, of Connellsville, is the inventor of this brick.

Riverside Coal and Coke Company.—A block of coke ovens is to be built on the 119 acres of coal land facing the Monongahela not far from Brownsville, and owned by this company, composed of Francis Rocks, Bernard O'Connor, John E. Rocks, E. D. Fulton and J. C. Work. The coal is much better adapted than the regular Pittsburg vein to coke making.

SOUTH DAKOTA.

Custer County.

(From Our Special Correspondent.)

Black Hills Porcelain Clay and Marble Company.—This company has 15 men at work on its marble quarry, 5 men at the black granite ledge, 3 men at the mica quarry.

Crown Hill Company.—This company is to ship from the Spokane mine a carload of concentrates this week to the Omaha smelters. The company intends sinking the shaft 500 ft. deep. The mill has about 25 tons daily capacity. S. E. Young is general manager.

Lawrence County.

(From Our Special Correspondent.)

Atokados Mining Company.—This company is sinking a shaft on the divide between Iron Creek and Spearfish Creek, 11 miles west of Deadwood. The shaft is down 260 ft. and it is expected that quartzite will be reached in 400 ft. The officers are: President, J. M. Metcalf; vice-president, D. T. Beams; secretary and treasurer, W. H. Hughes, of Omaha; general manager, D. J. Burke, Alliance, Neb.

Bullion.—Dr. H. H. Muggley, of Chicago, is shipping galena ore from this mine.

Cleopatra Mining Company.—This company has received machinery for a new hoist. The new cyanide plant is nearly ready.

Dakota Mining Company.—This company has decided to enlarge its cyanide plant at Central City to 200 tons, as the mines at Portland have been developed sufficiently to warrant this increase.

Galena Mining Company.—This company, the old Union Hill Company, is working 2 forces of men at the Hoodoo and Eureka shafts. A drift is being run from the bottom of the Hoodoo shaft and a crosscut is being made.

Gilt Edge.—It is stated that this mine will soon be reopened after being shut down nearly a year. The troubles among the stockholders are said to be straightened out.

Hidden Fortune.—Otto Grantz has teams and scrapers at work stripping off the rich shoot on this claim north of Lead.

Iron Hill.—This old mine in Carbondale Camp has been leased to W. A. Remer, of Deadwood, formerly vice-president of the company. He prospected the old workings thoroughly and found a body of silver-lead ore on the 160-ft. level. Shipments will be made to Kansas City.

Spanish R.—The shaft in this old mine has been retimbered to the 330-ft. level and a diamond drill is being used in the shaft bottom. The mine is owned by the Connors brothers of Spearfish.

Spearfish Cyanide Plant.—This plant, located at Spearfish, has been burnt, with a loss of $10,000. It had only recently been purchased by F. M. Wall, of Ragged Top.

University Gold Mining Company.—A 150-ft. tunnel has been started by this company on the W. W. Olds ground, 4 miles west of Deadwood, which will cut 3 verticals of ore. The company has 93 acres of ground.

Pennington County.

(From Our Special Correspondent.)

Cochran.—James Cochran is working his Huntington mill 3 miles west of Rochford, and is said to clean up $1,000 per month.

Holy Terror.—A shoot of ore 8 ft. wide has been found in this mine, at the 800-ft. level. It is not known whether this is a new vein or the old one, reported lost a few weeks ago. The Holy Terror mill has started up again and the Keystone mill will start as soon as the cyanide plant is in working shape.

TENNESSEE.

At a recent meeting of representatives of coal mining companies of East Tennessee it was decided that the representatives will recommend to a mass meeting of coal operators soon to be held that they do not grant demands for increased wages on account of the present state of the

coal market. The present contract with the miners expires August 21st, and a new scale will have to be agreed upon before that time.

TEXAS.

Palo Pinto County.

Standard Coal Mining Company.—This company, recently incorporated at Strawn, with a paid up capital of $100,000, held a stockholders' meeting Saturday and elected the following officers: W. W. Johnson, president; A. N. Edwards, vice-president; W. R. Eaves, secretary; A. F. Johnson, treasurer. The company has let contracts for opening 2 coal mines in Strawn. The Thurber Coal Company is now sinking a shaft 2 miles south of Strawn, and the Strawn Coal Mining Company is preparing to sink a second shaft on its land 1½ miles east of Strawn.

UTAH.

(From Our Special Correspondent.)

Bullion and Ore Shipments.—During the week ending July 21st there were sent forward from the several smelters 14 cars, or 589,722 lbs., lead-silver bullion; 5 cars, or 244,464 lbs. copper bullion. In the same week there were shipped from the different camps to smelteries outside of the State for treatment 83 cars, or 3,375,485 lbs., lead, silver and gold ore and 1 car, or 23,450 lbs., copper ore.

Lead Fluctuations.—Another drop in lead acts as a wet blanket on the lead-silver mines and has curtailed production. Some mine owners blame the American Smelting and Refining Company.

New Smelter Site.—As before intimated, the site of the $1,000,000 smeltery of the American Smelting and Refining Company is finally determined and it will be at Murray. It is said that the plans for the new structure are being prepared.

Carbon County.

(From Our Special Correspondent.)

Pleasant Valley.—About 70% of the heirs of the victims of the Scofield disaster have agreed to accept the terms of the company for $500 for each fatality. Some 300 men are at work in this Winter Quarters mine and matters are approaching normal conditions. The other mines of the company are working full capacity.

Juab County.

(From Our Special Correspondent.)

Tintic Shipments.—In the week of July 21st there were forwarded from the 3 rail points of the district 3 bars of bullion, 5 cars of concentrates and 93 cars of ore, contributed as follows: Centennial-Eureka, 31 cars; Mammoth, 3 bars bullion, 14 cars ore; Gemini, 9 cars; Bullion-Beck, 7 cars; Grand Central, 8 cars; Swansea, 6 cars; May Day, 5 cars; Godiva, 4 cars; South Swansea, 3 cars; Humbug & Uncle Sam, 2 cars; Tintic Iron, 2 cars; Joe Bowers, 1 car; Sunbeam, 1 car, and Eureka Hill, 5 cars concentrates.

Ajax.—On July 21st a consignment of 4 cars of good grade copper rock was loaded. All that is learned about underground conditions is favorable.

Bullion-Beck.—The ore body at the south end continues to show well. From other parts of the mine there is nothing of moment.

Centennial-Eureka.—Nothing is gleaned of any plan to unite the United States and Centennial-Eureka, which in some particulars would be of mutual benefit. In the meantime Centennial is opening more ore than is mined.

Grand Central.—Shipments are again on the increase and the question is, will this continue? Prof. W. S. Keyes wac here 2 days ago, investigating conditions for the Mammoth trespass suit. There are fresh intimations that this will be settled out of court.

Mammoth.—Everything about the property is favorable save the mill, which is not giving as good account of itself as formerly. At the directors' meeting on the 20th a $20,000 dividend was declared, payable August 1st.

Salt Lake County.

(From Our Special Correspondent.)

Bingham Copper and Gold.—Captain Duncan McVichie is now general manager of all the properties promoted by Hornblower & Weeks, of Boston, which, beside the Bingham, include Cochiti and Navaho, at Bland, N. M., and others. Under his direction exploration will take on a new impetus. Mr. W. H. Nutting, who has charge of the smelter construction, reports the work well up to date. The first lot of structural steel arrived July 21st and everything is moving splendidly.

United States.—Present force at mines is about 100 men. Exploration is actively advanced. Managing Director Holden plans to conduct some concentrating tests. There is nothing definite as to when smelter construction will begin.

Utah Consolidated.—Constructing Engineer George K. Fischer states that the foundation for the smelter addition is all but completed. Joseph Dederich has the contract for the steel framework and Joseph T. Ryerson & Son, of Chicago, for 300,000 lbs. sheet steel for roofing, etc. The new roasters will be of the McDougall design, which have proved so satisfactory at Great Falls. Car lot No. 115 is being loaded with pig copper, and as each car is a little over 60,000 lbs., this indicates that about 7,000,000 lbs. copper all told have been shipped. The first car was shipped in June, 1899.

Tooele County.

(From Our Special Correspondent.)

Consolidated Mercur Gold Mines.—On July 21st both the Mercur and the De La Mar folk met in their respective offices in Salt Lake and voted to deed their property to a New Jersey corporation to be known as the Consolidated Mercur Gold Mining Company; capitalization $5,000,000, in $5 shares. It is expected that the union will be consummated by August 1st. As before stated, 1/3 of the new shares go to Mercur holders and 2/3 to De La Mar.

Daisy.—As but $1,000 of the $5,000 receiver's receipts were made a first lien on the property it looks as though the receiver will not be able to start the mill. Probably this is the last scene of the last act of the Daisy Company.

Geyser-Marion.—Contrary to anticipation, the June mill product fell short of meeting the month's current expenses. The management hopes to more than make this good in July.

Hercules.—A 4-car lot of ore was marketed in Salt Lake on July 21st which netted $28 a ton above freight and treatment. This Stockton mine gives promise of soon being on a dividend basis, after an outlay of some $35,000 in betterments.

FOREIGN MINING NEWS.

AFRICA.

Rhodesia.

The Rhodesian Chamber of Mines reports the total output of gold in May at 6,553 oz. crude. For the 5 months ending May 31st the total was 39,768 oz., which compares with 30,100 oz. in 1899, showing a decrease of 332 oz., or 1.1%, this year.

ASIA.

India—Mysore.

The gold production of the Colar District in June is reported at 39,872 oz. crude, which is 431 oz. less than in May, but 2.712 oz. more than in June, 1899. For the six months ending June 30th the total output was 243,161 oz., which compares with 208,889 oz. last year, showing an increase of 34,272 oz., or 16.4%. The total this year was equal to 218,845 oz. fine gold, or $4,523,526.

AUSTRALASIA.

South Australia.

Judge Dashwood, the Government Resident of the Northern Territory, has forwarded to the Minister for Mines a sample of copper ore from a lode discovered at Robinson River, in the Gulf of Carpentaria district, a few miles southeast of Boorooloola. The assay showed 35% copper.

A site has been selected by the Government for the erection of ore floors at Port Augusta, says the "Australian Mining Standard." The Government intends to advance 50% on the assay of ores brought from far northern mines to Port Augusta, where State smelters are to be erected. The Government will cable to Fraser & Chalmers, of Chicago, for a furnace for treating 300 tons of ore daily, and a second furnace will be secured, but it will be 6 months before the first furnace is erected. Meantime the Government will either sell or partly purchase ores at Port August, and sent it to Port Pirie or Wallaroo for treatment.

Tasmania.

The returns showing the quantities and values of minerals exported from Tasmania during May are as follows: Copper ore, 11½ tons; copper (blister), 803 tons; gold, 6,944 oz.; gold pyrites, 27½ tons; iron ore, 437 tons; silver ore, 347 tons; tin, 165 tons; silver-lead bullion, 148 tons; zinc-lead, 1 ton; wolfram, 1½ tons. The total value was £130,375, compared with £118,611 for the same month of last year.

Victoria.

According to the returns supplied to the Mines Department, the gold yield in Victoria in May was 71,644 oz., as compared with 67,796 oz. in May, 1899. The total output for the first 5 months of the present year was 288,388 oz., being 29,284 oz. less than was obtained last year.

West Australia—Kalgoorlie District.

(From Our Special Correspondent.)

Associated Mines.—The stock is now selling in London for $11 instead of $70 a few months ago, or a depreciation of $3,000,000 in a little over 6 months. The returns have decreased from 14,000 oz. to 2,500 oz. per month. Last November the reserves were estimated at $25,000,000 by the then resident manager and by European experts. The mine has been thoroughly examined by Messrs. Frecheville, London, and Angood, Cornwall, and their reports are anything but optimistic. One expert, it is reported, values the reserves at $250,000, another at $300,000, but at present there is a loss on every ton of ore worked. The cost of mining and treatment was over $20, and for the past 2 months the ore was less than $18 per ton. The slump in the price of these shares has brought all the shares with it, but not in the same ratio. Last September the market value of the 15 leading mines was $155,000,000, to-day less than $50,000,000.

Boulder Main Reef.—The output for May was 1,571 oz. from 1,160 tons. of ore treated, all sulphide. This mine has now adopted a double filter press, the first on the field, perhaps in the world, to do so. The water in use contains 12% of salt, and after being in use for awhile destroys the solvent power of the cyanide, and it is hoped that the double filter pressing will remove the difficulty with new solutions; 95% can be easily obtained at a low cost of about $5, but when the solution gets saturated the cost increases and the extraction decreases. The 500 and 600-ft. levels are being opened simultaneously.

Golden Horseshoe.—The output is expected to reach 10,000 oz. for May, as now 60 head of stamps are at work.

Great Boulder.—Output remains stationary at about 7,000 oz. This mine about 3 weeks ago opened up the vein at the 900-ft. and 1,000-ft. levels. At 900-ft. level the vein was over 7 ft. wide and worth 25 oz. per ton, whereas at the 1,000-ft. level the vein was 15 ft. wide, worth over 1½ oz. Developments on the vein prove the permanency of values. The new sulphide plant with 12 Edwards furnaces should be at work early next months.

Ivanhoe.—The output from the mine for May was 9,004 oz., an average of 1½ oz. per ton. The decreased output is due to the Sunday Labor Bill, whereby all labor is forbidden on Sundays, without the consent of the Inspector of Mines, save where a chemical continuous process is in use. Much indignation is felt throughout the whole of the Australasian colonies against the London directors at the summary dismissal of their late manager, A. M. Thomas Hewitson, whose record has been above suspicion, but he refused again and again to work the mine for market purposes.

Lake View Consols.—This mine has not yet declared its output for May, but it is anticipated about 8,000 oz. Dr. Diehl's process is to be at work about August 15th.

Perseverance.—The output for May has been 2,335 oz. Tons milled, 1,750 tons for 993 oz., and 1,342 tons of sand treated by cyanide for 1,342 oz. The above is from oxidized ore. The new sulphide plant should be at work treating 300 tons a day next month. The furnaces, Holtoff-Welthy, are completed, the big engine, 450 H. P., built by E. P. Allis, Milwaukee, has been given a trial run, and all the rest of the machinery is nearing completion. The mine at the lower levels is opening up well.

South Kalgurli.—The mine is now a producer, the first month's output being over 1,200 oz., or a shade over 1 oz. per ton. This was the result of oxidized ore crushing. The Brown furnace is at work and the sulphides are being treated.

CANADA.

British Columbia—West Kootenay District.

(From Our Special Correspondent.)

Rossland Ore Shipments.—The output of ore for the present year up to July 19th from Rossland mines amounts to 82,500 tons gross, valued at $1,400,000.

Athabasea Gold Mine.—A new company has been registered under the name of the Athabasea Gold Mine, Limited, having a paid-up capital of £100,000 in ordinary shares of £1 each. Holders of the old company are entitled to claim one share in the new company, with 17s. per share credited as having been paid up for every 2 shares held in the old company.

Center Star.—The new compressor plant at this Rossland mine is being put in. A large quantity of ore has been dumped on the outside of the ore bins. Shipments are not likely to be resumed before September.

Le Roi.—The management is shipping about 4,500 tons weekly.

Le Roi No. 3.—The arrangements for shipping ore from the Nickel Plate are complete. It is, however, not stated when shipments will begin.

Northport Smelter.—It is authoritatively stated that the capacity of this smelter is to be increased to 1,500 tons. The present daily capacity is 800 tons. The Trail smelter has a daily capacity of 650 tons, which will shortly be doubled. The increase in both cases is due to the proposed increase in the output of Rossland mines.

Slocan Ore Shipments.—For the 6 months and 15 days ending July 15th there were shipped from Slocan mines 7,500 tons of ore valued at

$600,000. The shipments of ore from the same division for the year 1899 amounted to 21,507 tons of silver-lead ore, valued at $1,890,791, and 14 oz. of gold at $234.

Ontario—Lake of the Woods District.

(From Our Special Correspondent.)

Champion.—This mine is testing 50 tons of ore at the Rat Portage reduction works, and has got $14 to the ton in gold. Work is under way day and night.

Eldorado.—This mine is putting in a 10-stamp mill at Eagle Lake and will have it running this week.

Gold Panner Company.—This mine is tamping rock at its new mill. The work of development began about 17 months ago.

Little Bobs Mining Company.—This company has secured 2 locations adjoining the Wendigo, and on its vein, that are to be opened at once.

Mikado Gold Mining Company.—This company is to expend $45,000 in surface improvements at once. Its June production was about as usual—$14,000.

Triggs Gold Mining Company.—This company has closed its mine on account of disagreement among the stockholders. It is expected to re-open soon.

Ontario—Seine River District.

(From Our Special Correspondent.)

Canadian Mines Development Company.—This company is showing up the 8-ft. vein, and work is pushed. The force is being increased as fast as possible.

Golden Crescent.—This mine has closed down indefinitely.

EUROPE.

Great Britain.

(From Our Special Correspondent.)

Associated Portland Cement Manufacturers, Limited.—This is one of the largest companies brought out recently in London. It has been formed with a capital of £5,000,000 in shares and £3,000,000 in debentures, to acquire some 30 Portland cement works in Kent, Essex and in the north of England. This company is of course in the nature of a combine, and, as is usual in cases of this sort, estimates as to the value of the individual works and the prices paid for them are not given. The estimated total gross and net profits are also somewhat vague and unitemized. I am afraid that the combine looks too much like a repetition of the United Alkali Company, and that the dividends on the ordinary shares may prove precarious.

NEWFOUNDLAND.

The strike of the iron miners at Belle Isle is ended. The men did not get the 15c. an hour rate for mining they demanded, but the new schedule of wages provides for 11c. an hour for surface workers, 12c. for miners below ground, and 15c. for overtime. Operations have been resumed with a full force.

COAL TRADE REVIEW.

New York. July 27.

Anthracite.

There is little change in the usual midsummer dullness that prevails in the anthracite trade and little improvement is to be expected for some time yet.

Interest centers about the possibility of a general strike of the miners. The labor organizers have been working to increase the number of union miners for several years and the meeting of delegates from the local unions at Hazelton on August 13th promises to be of the greatest importance. The local organizers in the Wyoming Valley speak confidently of the strength of the union there, but those in other fields are not so confident. There is little foundation for the report published by sensational newspapers in New York that 17,000 miners of the Delaware & Hudson Company had struck. This company has a strike at some collieries near Scranton, but the number of men involved is about 1,700, not 17,000. The miners in the Wyoming Valley have chafed over several details of the present mining scale, arranged in 1872, for years. These are chiefly the high prices for supplies that the miners must pay and the system of docking mine cars not properly loaded. On top of these is a demand of the United Mine Workers for "recognition." As we have often said, any reduction in the price of supplies means the making of a new mining scale, while a uniformly fair system of dockage is probably impossible, owing to the great differences in the size of the seams and quality of the coal at different collieries. The present mining scale is a liberal one, provided the miner has steady work, but from the nature of the anthracite trade the demand for coal is bound to be heavier at some times than others. The fairness of the present scale is shown by its lasting so many years. The anthracite miner has suffered not from low wages, but from lack of work, and his periods of idleness are often due to causes beyond the control of the companies that employ him.

In the West trade shows little improvement, either in Chicago territory or at the head of the lakes. The movement of coal to upper lake ports is not heavy, though lake freights from Buffalo to Duluth have fallen to 40c. and may go to 30c. According to Duluth reports, however, the amount of coal now on dock there is nearly equal to that at the close of navigation last year. At the lower lake ports few new orders for coal are reported and this is the condition at New York, Philadelphia and Boston. Considerable coal is going into storage. It will all be needed later if there is trouble among the miners. The list price for free-burning anthracite f. o. b. New York Harbor ports is: Egg, $3.75; broken and nut, $4, but coal can be had at about the same figures as before July 1st.

Bituminous.

The seaboard soft coal trade is rather dull, the dullness being most marked in the New York Harbor trade. Probably the Long Island Sound trade shows the most activity. Ocean freights are low, and there are plentiful supplies of the cheaper grades of coal to be had.

The George's Creek strike is still unsettled. The presidents of the various companies, however, have met committees of the miners, treating with them directly, and it is said that the miners in the Lonaconing field have decided to go to work at the old rate of 55c.

Transportation from mines to tide is fair and car supply at the collieries has improved. The action of the railroads in demanding the names of consignees and the payment of freight in advance has had its effect, and vessels at the farther lower ports are having less delay in loading.

In the coastwise vessel market vessels are in good supply, and freight rates are weak. The rates to Boston and the Sound ports are very low. We quote current rates from Philadelphia as follows: Providence, New Bedford and the Sound, 55@60c.; Boston, 65c.; Portland, 65@70c.; Salem, 65@75c.; Lynn, 75c.; Wareham, 75c.; Newburyport, 75@80c.; Portsmouth, 70@75c.; Bath, 70c.; Bangor, 75c.; Dover, $1 and towages; Saco, 90c. and towages; Gardiner, 75@80c. and towages. Transatlantic rates are going up as a result of the troubles in China. We note a charter of 4,000 tons by steamer "Calliope" from a Chesapeake Bay port for Naples, Genoa or Leghorn at 18s. ($4.32).

We quote Clearfield coal at $2.30@$2.65 f. o. b. New York Harbor ports.

Birmingham, Ala. July 23.

(From Our Special Correspondent.)

Coal production is as heavy as it has been, not more than two or three hundred men being out on strikes. There is said to be trouble brewing among the mines in Walker County along the Southern Railway, from which all the coal used in the Mississippi River trade is supplied, the operators and miners having failed to make a contract for the present year. So far there has been no cessation in output; 1 or 2 small mines are closed, but the coal mined at these places does not add very materially to the general output.

The Louisville & Nashville Railroad Company will this week receive bids for the construction of an extension to the properties of the Stout Mountain Coal Company, in Blount County. The road will be four months in building and in the meantime the Stout Mountain Coal Company, which is headed by Messrs. Morrow & Nabers, of Birmingham, will begin developing its coal lands. The same company will at once commence the construction of coke ovens. The work on an extension from Oneonta, on the Birmingham Mineral Railroad, to the coal properties of the Underwood Coal Mining Company, in Blount County, is being rushed. Large mines are being opened and by the time the railroad reaches the place coal will be ready for shipment. Bids will be asked for shortly by the Southern Railway for constructing 2½ miles of road from its line in Bibb County near the Cahaba River to the site of a new mining camp being developed by Mr. H. C. Reynolds & Son. The work on the extension of the Southern Railway at Belle Ellen, in Bibb County, is nearing completion. The Bessemer Land and Improvement Company is opening 3 new mines in this territory.

A big price is asked for coke now. The supply is becoming greater every month, but several hundred more ovens will have to be built before the supply is as large as furnacemen would like to see it.

Chicago. July 23.

(From Our Special Correspondent.)

Anthracite Coal.—There is not much doing in hard coal, the buying from out of town as well as in being of a small nature. There has been some inquiry for large lots. The recent advance of 25c. per ton has very much delayed buying and the market will have to digest the advance for some time yet before actual trade sets in. Prices are: Grate, $5.25; egg, stove and chestnut, $5.50.

Bituminous Coal.—Each week brings a slight betterment in business in soft coal. The buying of the week has footed up a good total, some large lots having helped the aggregate. Prices are firmer.

Cleveland, O. July25.

(From Our Special Correspondent.)

The coal market is in a state of upheaval just now as far as transportation rates on the lakes are concerned. This week has seen two material reductions. The Milwaukee rate first dropped from 55c. to 50c. and to-day another break was made to 40c. Now the shippers are at work trying to line up the entire market on the basis of the Milwaukee rate. By making the usual differences between the ports it would follow that the Duluth rate will be established at 30c., to which end the efforts of the shippers are being directed. The withdrawal of some of the larger wild boats from the ore trade has increased the amount of tonnage that is being devoted to the coal and the grain trade. Then the shippers have just received orders to stop shipments to some of the upper lake ports, as the docks are congested badly. It is now figured out that 25% of the dock space is closed to any further receipts of coal until the northern railroads have shipped some of the coal away to the yards of the consumers. The shippers from the Ohio and Pennsylvania fields have been sending coal up the lakes faster this year than ever before and the condition which now exists has been expected.

Pittsburg. July 25.

(From Our Special Correspondent.)

Coal.—All the mines in this district are being operated to their fullest capacity, as the car service has greatly improved. Coal concerns are taking advantage of the good car supply by making use of all that are placed at their disposal by the railroad companies and an unusually heavy tonnage is going forward. Every effort is being made to ship all the coal possible while cars are plenty, as a shortage is expected as soon as the iron and steel business begins to revive. The Pittsburg Coal Company, the combination of railroad coal operators, is still receiving inquiries for coal for the export trade. The Monongahela River Consolidated Coal and Coke Company, the river coal combination, has plenty of empty coal boats and barges to load, but will be unable to ship any coal South until there is another rise in the rivers. There is now about 10,000,000 bu. loaded and this will likely be doubled before there is an opportunity for shipments, according to present indications. The principal coal territory owned by this company is located in Washington and Greene counties. The recent stories circulated of alleged faults in that field have caused considerable uneasiness among holders of coal property. Prof. Edwin Linton, of the chair of geology in Washington & Jefferson College, has made a thorough investigation on the subject and has expressed a decided opinion to the effect that there is no reason to suppose that the Pittsburg coal is absent from an acre of land in those two counties where it has not been removed by erosion, together with overlying rock. He says that if the deep wells, which have been drilled in such numbers within recent years, had failed to find the coal over any considerable space, then there would be reason to believe in barren area.

Connellsville Coke.—The coke trade improved slightly in both production and shipment last week and prices remained about the same. Furnace coke is quoted at $2 and foundry at $2.25@$2.50. The total number of ovens in the region has been increased from 20,341 to 20,420 by the addition of the Hester works with 50 ovens, 15 new ovens at United No. 3; 10 at Calumet and 4 at Chester. Of this number 16,099 were active and 4,321 idle. The production was 169,066 tons, an increase of 7,710 compared with the previous week. The shipments for the week aggregated 8,680 cars, distributed as follows: To Pittsburg and river tipples, 2,771 cars; to points west of Pittsburg, 4,348 cars; to points east of Connellsville, 1,561 cars. This was an increase of 561 cars compared with the preceding week.

San Francisco. July 21.

(From Our Special Correspondent.)

Coal receipts at San Francisco by water in June were 132,802 short tons. For the six months ending June 30th the receipts were as follows, in tons:

	1899.	1900.
Eastern (anthracite and bit.)	17,986	2,789
Oregon	29,310	20,210
Washington	313,273	339,567
Total domestic	360,569	362,566
British Columbia	231,098	268,607
Australia	78,610	61,441
Japan	6,350	6,100
Great Britain	36,949	36,159
Total foreign	353,007	372,307
Totals	713,576	734,873

The increase this year was 21,297 tons, or 3%. The gain in domestic was in Washington coal; in foreign in the British Columbia coal. The statement does not include coal from California and Wyoming mines, received by rail.

Shanghai, China. June 13.

(Special Report of Wheelock & Co.)

Coal.—The market has been quiet, with only retail transactions. Arrivals include 9,921 tons

Japanese and 3,415 tons Kaiping coal. We quote Cardiff, 20.50 taels per ton; Australian, 13 taels; Kaiping lump, 7.50@8.50 taels; Kaiping small, 5@6 taels; Japan, all delivered under contract.

Kerosene Oil.—No business done owing to the political troubles in the north. Arrivals have been 170,000 cases American. Stocks are 722,500 cases American, 821,900 cases Russian and 116,000 cases Langkat. We quote for Devoe's American, 2 taels per case; for Langkat (Sumatra), 1.78 taels per case oil and 1.40 for bulk oil. For Russian Batum the quotations are 1.78@1.90 taels per case, according to chop, and 1.40 taels per two tins for bulk oil.

SLATE TRADE REVIEW.

New York. July 27.

There is little change in the general condition of the slate trade, unless it be for the worse. Consumption has fallen off a lot, but production is only about half of what it was at this time last year. There are few, if any, labor troubles at the quarries. Stocks of slate are accumulating slightly. No improvement in trade is anticipated for some months. Ocean freights are rising and bid fair to go so high as to cut off export shipments altogether.

The list of prices per square for No. 1 slate standard brand f. o.b. at quarries in carload lots, is given below:

Size, inches	Monson or Br'n-ville.	Bangor.	Bangor Ribbon.	Alb'n, or Jackson Bangor.	Lehigh.	Peach Bottom.	Sea Gr'n.	Unfad'g Green.	Red.
	$	$	$	$	$	$	$	$	$
24 x 14	6.50	3.50	3.00	3.25	3.10	5.10	3.15	.....	.....
24 x 12	6.60	3.50	3.00	3.25	3.10	5.25	3.15	3.75	.....
22 x 12	6.60	3.50	3.25	3.50	3 25	5.25	3.15	3.75	.....
22 x 11	6.50	3.75	3.25	3.50	3 25	5.25	3.15	4.00	.....
20 x 12	6 90	3.75	.....	3 50	3 25	5.25	3.15	3.75	.....
20 x 11	6.80	.....	.....	3.75	3.50	5.25	3.15	.....	.....
20 x 10	6.80	4 25	3.50	3.75	3.50	5.35	3.15	4 25	10.50
18 x 12	6.80	3 75	....	3.50	3.25	5.25	3.15	3.50	.
18 x 11	7.00	....	.	.	.	...	3.15	3.75	....
18 x 10	7.00	4.25	3.50	3 75	3.50	5.35	3 15	4.00	10.50
18 . 9	7.00	4 50	3.50	3.75	3.50	5.35	3 15	4 25	10.50
16 x 12	6.80	3 75		3.50	3.25	.....	2.95	3.50	....
16 x 10	7.00	4.25	3.50	3.75	3.50	5 25	2.95	4.00	10.50
16 x 9	7.00	4.25	....	3.75	3 50	5.35	2.95	4.25	10.50
16 x 8	7 00	4 50	3.50	3.75	3.50	5.35	2.95	4 25	10.50
14 x 10	6 60	3.75	3.25	3.25	3.25	5 25	2.85	3.75	10.50
14 x 9	6 50	....	.....	.....		....	2.85	3 75	10 50
14 x 8	6 60	3.75	3.25	3.25	3.10	5.10	2.85	4.25	10.50
14 x 7	6 40	3.75	3 25	3 25	3.10	5.10	2.60	4.25	10.50
12 x 10	5.75	...	.	....	.....	...	2.60	3.25	... .
12 x 9	5.60	.	.....	....	.....	....	2.60	3.25	. ....
12 x 8	5.50	3.50	.....	3.00	2.80	4 85	2.60	3.50	9.0
12 x 7	5.00	3.25	.....	3.00	2.80	4.85	2.50	3.50	9 00
12 x 6	4.80	3 25	....	3 00	2.80	4.75	2.50	3.50	8.50

A square of slate is 100 sq. ft. as laid on the roof

IRON MARKET REVIEW.

NEW YORK, July 27, 1900

Pig Iron Production and Furnaces in Blast.

Fuel used	Week ending July 28, 1899.		Week ending July 27, 1900.		From Jan., '99.	From Jan., '00.
	F'ces	Tons.	F'ces.	Tons.	Tons.	Tons.
An'racite & Coke.	204	258,500	257	276,875	8,269,063	8,521,298
Charcoal.	20	6,250	22	5,950	175,040	203,927
Totals..	224	264,750	279	282,825	8,444,103	8,725,225

The iron market shows little change from the previous week. There has been some increase in buying of raw material, both pig iron and steel billets, by concerns which have exhausted their stocks; but these purchases are chiefly in lots of moderate size for immediate delivery. Prices are still uncertain, and there is a tendency to hold back for a further fall. There are many opinions about the volume of fall trade, but most of them are to the effect that a considerable volume of business may be expected.

Inquiries for export continue to come in, but most of them are based on prices lower than makers are yet ready to consider. There seems to be a general opinion abroad that the iron trade here has gone to pieces, and that any offers will be welcomed. Our makers are hardly ready to trade on that basis; especially as there is so far no great surplus to be disposed of.

A conference of steel makers has been called to be held at the office of the Federal Steel Company in Chicago to consider the situation.

Notes of the Week.

The statement of the Tennessee Coal, Iron and Railroad Company for June and the half-year ending June 30th is as follows:

	June.	Six months.
Net earnings	$184,037	$1,790,099
Charges	54,777	328,660
Surplus	$129,260	$1,461,439

The increase in surplus over last year was $1,220,955.

Birmingham, Ala. July 23.

(From Our Special Correspondent.)

The pig iron market continues quiet and there are no indications of an immediate improvement. Shipments are still fairly good, though not much on new business. Quotations show no improvement, but are inclined to be weak. There is talk that as a consequence of the recent changes in pig iron quotations the prices paid miners in wages will be reduced 2½c. per ton, their contract being on the pig iron selling basis.

Some iron is accumulating on the yards of the furnaces, but little is going to the yards of the Warrant Company. Railroad officials say that shipments are not as steady and heavy as a few weeks ago. The export movement is not as brisk as it was expected to be. Representatives of Alabama manufacturers in foreign countries speak of fine prospects and export trade promises to be quite active this fall.

Four or five furnaces are being repaired, 3 around Birmingham and 1 or 2 in the neighborhood of Sheffield. Prospects with the foundries and machine shops are bright and so far there have been few machinists or foundrymen laid off because of the usual summer dullness.

No work is being done in the steel plant at Ensley.

The following quotations are given: No. 1 foundry, $15@$15.50; No. 2 foundry, $14.50; No. 3 foundry, $14; No. 4 foundry, $13@$13.50; gray forge, $12.50; No. 1 soft, $15@$15.50; No. 2 soft, $14.50.

The rolling mills are still cold, with no definite information as to when they will resume operation.

Buffalo. July 25.

(Special Report of Rogers, Brown & Co.)

It is becoming pretty generally conceded by both producer and consumer that prices of pig iron have almost reached that point where further reductions will mean the closing down of even the most modern and best-equipped and best-located blast furnace plants, or cause them to run at a loss. Many buyers are viewing with satisfaction the now rapidly approaching time when they can with safety depart from the course pursued during the first half of the year, of buying from hand to mouth, and be able to contract ahead for their requirements for both iron and steel. In the meantime shipments from furnaces are growing steadily heavier, even though we are in the midst of the usual slowing up of the summer months, and prices rapidly dropping. Sales, therefore, have necessarily been more numerous and for a little larger amounts, and although there is no manifest disposition shown as yet to contract far ahead, still a quite material increase in daily shipments and sales of iron during these generally dull months have a significance that must not be overlooked. We quote below on the cash basis, f. o. b. cars Buffalo: No. 1 Strong Foundry Coke Iron, Lake Superior Ore, $18.25@$18.75; No. 2, $17.75@$18.25; Southern Soft, No. 1, $18.25@$18.75; No. 2, $18.50@$19; Lake Superior Charcoal, $21.50; Coke Malleable, $19.25@$19.75.

Chicago. July 23.

(From Our Special Correspondent.)

Pig Iron.—The demand for pig iron is a little better than previous week, the foundries running more freely. However, the uncertainty as to prices prevents much business from being booked. Inquiries from implement manufacturers and others are constantly being made for delivery for 6 months to a year ahead, but as yet no business has resulted. Prices are about on a par with last week and are: Lake Superior charcoal, $22@$23; local coke foundry No. 1, $19@$19.50; No. 2, $18@$19; No. 3, $17.50@$18.50; local Scotch foundry No. 1, $19@$19.50; No. 2, $18@$19; No. 3, $17.50@$18.50; Southern coke No. 1, $19.10@$20.35; No. 2, $18.10@$19.35; No. 3, $17.10@$18.35; Southern No. 1 soft, $19.10@$20.35; No. 2 soft, $18.10@$19.35; Ohio strong softeners, $22@$23.85; malleable Bessemer, $20@$20.50; coke Bessemer, $21@$21.50.

Cleveland, O. July 25.

(From Our Special Correspondent.)

Iron Ore.—The movement of iron ore is now confined almost exclusively to contract tonnage. A week ago the shippers received orders from the producers in the upper lake region to stop taking wild tonnage, as the movement had been so heavy as to have exhausted the supply for wild boats. No change has been made in these orders. The vessel owners are still on the market offering their tonage, which is going begging just now, but the takers are very few. If the movement of wild ore were at all lively now with the condition of other freights as they are it would be a question with the owners to keep the rates up to their present standard. Lake freights generally are very weak, and if the wild movement was anything to speak of it would share the general conditions. At a recent meeting of the Ore Association it was decided to hold the price of ore at the figure at which sales were made the first half of this year—$5.50 for Bessemer, with the usual difference on the other grades. The association has decided that the price of ore shall not be affected by the slump in iron, and all sales are being made at the agreed price. No ore producer has bolted the action of the association, so a break from the agreement is hardly expected.

Pig Iron.—With all of the foundries making machine castings closed on account of the strike of the moulders, the outlook for business is not very bright. The sales have been confined to the demands of the few gray iron foundries that are running. The furnacemen know now that no concessions are to be expected from ore producers, and in consequence it is believed that the price of foundry irons will not go lower. At present Nos. 1 and 2 are being sold between $15 and $16.

Finished Materials.—This week has seen another drop in the price of plates and bars. The quotation now is 1.15 on both, and some quotations have been even lower than that, but the business done at that figure was small in amount. This price is low enough to make it uncomfortable for the small mills, and some of them are shutting down. Billets are now quoted at $21.50, with some talk of a lower figure. Beams and channels are holding firm at the agreed price. One of the larger mills outside of the agreement has offered the smaller sizes of angles as low as 1.50c., but this competition has been ignored by the other mills, and the buyers appear to be satisfied with the price. The business in this has been very heavy. Bridge work is especially brisk. Inquiries have been made for several thousand tons, but the order will not be placed for a day or so.

Philadelphia. July 26.

(From Our Special Correspondent.)

Pig Iron.—Several things co-operate to preserve a quiet market. Were buyers to press their advantages they might be able to secure iron at less than current rates, but there is very little business being done. Foundrymen are in no haste, though several small lots for mixing were taken for immediate delivery. The mill people are ready to buy for early delivery, but none have confidence enough to risk long contracts.

Billets.—Things are at a standstill. Consumption has fallen off for this month. Billet consumers seen to-day say it looks as if present prices would stand, but they will not pay that or any other price until the market drives them.

Merchant Bar.—The position of the Amalgamated Association as to the wage schedules leads us to believe there will be a strike unless the managements sign, and we believe they will sign. A good deal of bar iron for car work is being inquired for and Eastern bar mills will make much of it. Bars are quoted at 1.30@1.40c., but too little new business has been placed.

Skelp.—There is very little new business.

Merchant Steel.—From our point of view there is a move to bear the merchant steel market. The crucible steel trust is proposing a range of prices that do not suit the trade, and it will not help business. Orders will be backward and small until things are more setled.

Sheet.—The only business worth speaking of this week has been done in corrugated material for roofing, etc.

Structural Material.—A large and satisfactory volume of business is being done in structural material according to local manufacturers. A large amount of work is in sight.

Plate.—Plates in small lots are firm and in demand, even now in the middle of summer. There is talk of very heavy orders. The ship-builders are buying all the time. The bridge-builders are getting down to work.

Steel Rails.—There is nothing new, but railroad men say steel rails are too far above the market. The mills have an abundance of work. The Cambria people are likely to make steel freight cars.

Scrap.—Scrap would be cleaned up if holders would accept buyers' offers.

Pittsburg. July 25.

(From Our Special Correspondent.)

There was no improvement in the iron and steel markets during the week, but action is to be taken this week, if plans do not fail, that is calculated to stimulate prices and induce buying. The meeting of steel interests and the Bessemer Furnace Association that was scheduled to take place in New York last week was suddenly called off, as too much prominence had been given to the event. It is announced to-day that the leading steel interests of the country and the furnace owners are to meet to-morrow in Chicago. The gathering will be secret, but it is known that the object is to discuss the situation and take some action. The open market that was recently declared in some lines of iron and steel has been very unsatisfactory. At the Chicago meeting an effort will be made to establish prices and restrict production. During the week prices in several lines have taken

another drop. Bessemer pig iron is quoted this week at $17, Pittsburg, and several small sales were made at that price. Steel billets are down to $19 and steel bars and tank plates have also declined. Structural material is firm and the demand continues good. The steel mills in this district are being operated to their capacity and the independent iron mills are beginning to resume. Zug & Company, one of the oldest concerns in the city, signed the Amalgamated Association scale and started its sheet mill and part of the rolling mill on Monday. This company is not in any combination. Phillips, Nimick & Company also signed the scale and will start this week. From present indications a strike will be declared by the Amalgamated Association at all the plants of the Republic Iron and Steel Company and the union mills of the American Steel Hoop Company. The vote of the lodges of the Amalgamated Association on the proposition of the manufacturers for a change in the base of the wage scale from the original demands of the workers was counted this week. The result was overwhelmingly in favor of adhering to the demands decided upon at the annual convention held in Indianapolis in May. The new scale calls for an advance in the base over last year's scale from a puddling rate of $5 a ton when bar iron sales for two months average 1.4c. to a puddling rate of $5.50 a ton when the average is 1.5c. The rate is to increase with every one-tenth cent advance in the price of bar iron. The combinations want the old base restored and their representatives declare they will not meet the workers' committee again unless it is prepared to modify the demands. This, however, is not likely to be done in the immediate future at least, and the result will be a strike, and the combination mills will remain idle. The indications are that a large number of the independent concerns will accept the terms of the Amalgamated Association and put their plants in operation.

Pig Iron.—The price of Bessemer pig iron has dropped to $17, Pittsburg, during the week and several small sales for immediate delivery were made at that price. Gray forge has dropped to $15 and sales aggregating about 1,000 tons are recorded. No. 2 foundry iron is quoted at $15.50@$16.50.

Steel.—Bessemer steel billets have declined to $19, but no sales of any consequence were made. Steel bars and tank plates have taken a decided drop. The former quoted at 1c. and the latter at 1.10c.

Sheets.—There is no change in American Sheet Steel Company's prices. No. 28 gauge is held at 3.20c. and No. 27 at 3.10c. Independent manufacturers are quoting sheets a trifle lower, but say that there is no indication of a drop below 3c.

Ferro-manganese.—The price remains at $85 a ton for 80% domestic and $100 for small lots.

New York. July 27.

The local iron market is far from being in a settled condition. The prices of some lines of finished goods are held up by agreements among manufacturers, but the general tendency is still downward.

Foreign trade shows a falling off. We note shipments of $28,000 worth of manufactured steel, including railroad iron to Melbourne, inquiries for about $100,000 of machinery and car material from France; a shipment of $25,000 worth of structural iron and steel to Belgium, and a shipment of $35,000 worth of agricultural implements to New Zealand.

Pig Iron.—The market continues heavy and there is no sign of an upward movement in prices, which are generally inclined to be weak. We quote for Northern irons, tidewater delivery: No. 1 X foundry, $17.25@$18.25; No. 2 X $16.50@$17.25; No. 2 plain, $16@$16.50. For Southern irons on dock, New York: No. 1 foundry, $20.25@$20.75; No. 2, $19@$19.50; No. 3, $17.50@$18.25; No. 1 soft, $20.25@$20.75; No. 2, $19@$19.50; gray forge, $16.50@$17.

Bar Iron and Steel.—The market is still unsettled. Common bars are quoted as low as 1.35c. for large lots on dock; refined bars, 1.45c.; soft steel bars, 1.35c.

Plates.—Eastern mills do not care to go below 1.35 and are trying to hold to that limit. Western Pennsylvania mills, however, are not so particular and the market is very unsettled. We quote for large lots at tidewater: Tank, ¼-in. and heavier, 1.35@1.40c.; tank, 3/16-in., 1.45c.; shell, 1.50c.; flange, 1.60c.; marine, 2.10; universals, 1.35@1.40c.

Steel Rails and Rail Fastenings.—Prices at the Eastern mills are unchanged and we continue to quote: $35 f. o. b. Eastern mills. Smaller rails are quoted: 12-lb., $40; 16-lb., $40; 20-lb., $40; 30-lb. to 40-lb., $38; 40-lb. to standard, $36, with the usual advance for small orders. We quote angle bars, 2.20c.; fish plates, 2.15c.; spikes, 2.20c.; bolts, 3.20c.

Structural Material.—This section of the market continues to show the best business, as for some months past. We quote in large lots at tidewater: Beams, 2.10c.; channels, 2.10c.; angles, 2c.; tees, 2.15c.; zees, 2.10c.

METAL MARKET.

NEW YORK. July 27.

Gold and Silver.

Gold and Silver Exports and Imports
At all United States ports in June and year.

Metal.	June. 1899.	June. 1900.	Year. 1899.	Year. 1900.
GOLD.				
Exports	$20,908,327	$8,052,738	$27,553,324	$30,423,212
Imports	3,105,686	1,984,849	23,387,647	14,754,661
Excess	E.$17,802,641	E. $6,107,889	I. $4,165,677	E.$15,568,551
SILVER.				
Exports	3,843,299	5,187,920	27,119,948	30,372,286
Imports	1,895,393	4,879,970	14,436,715	18,673,322
Excess	E. $1,947,906	E. $307,950	E.$12,683,233	E.$11,698,96

This statement includes the exports and imports at all United States ports, the figures being furnished by the Treasury Department.

Gold and Silver Exports and Imports, New York
For the week ending July 19th, 1900, and for years from January 1st, 1900, 1899, 1898, 1897.

Period.	Gold. Exports.	Gold. Imports.	Silver. Exports.	Silver. Imports.	Total Excess, Exp. or Imp.
We'k	$1,631,282	$850	$639,240	$16,552	E. $2,253,120
1900..	22,216,574	1,579,158	22,236,390	2,420,695	E. 40,453,111
1899..	11,424,967	7,371,726	15,492,017	1,873,452	E. 17,671,806
1898..	4,534,463	69,018,025	18,559,573	1,893,956	I. 47,817,945
1897..	11,958,564	1,985,472	24,817,044	1,571,566	E. 34,228,567

The United States Assay Office in New York reports the total receipts of silver at 89,000 oz. for the week. Total since January 1st, 2,830,000 oz.

Average Prices of Silver per oz. Troy.

Month.	1900. Lond'n Pence.	1900. N. Y. Cents.	1899. Lond'n Pence.	1899. N. Y. Cents.	1898. Lond'n Pence.	1898. N. Y. Cents.
January...	27.30	59.30	27.42	59.36	26.29	56.77
February..	27.49	59 76	27.44	59.42	25.89	56 07
March.....	27.59	59.81	27.48	59.64	25.47	54.90
April.....	27.41	59.59	27.65	60.10	25.95	56.02
May.....	27.56	59.96	28.15	61.23	26.31	56.98
June	27.81	60.42	27 77	60 43	27.09	58.61
July.....	.....	.....	27 71	60 26	27.32	59.06
August....	.....	....	27.62	60.00	27 48	59.54
September	.....	.....	27.15	58.89	28.05	60.68
October ..	.....	.....	26.70	57.98	27.90	60.42
November	.... ..	.....	27 02	58.67	27.93	60.60
December.	....	.....	27.21	58.99	27.45	59.42
Year....	.....	.....	27.44	59.58	2.76	53.2

The New York prices are per fine ounce; the London quotation is per standard ounce, .925 fine.

Average Prices of Metals per lb., New York

Month.	COPPER. 1900.	COPPER. 1899.	TIN. 1900.	TIN. 1899.	LEAD. 1900.	LEAD. 1899.	SPELTER. 1900.	SPELTER. 1899.
Jan	15.58	14.26	27.07	22.48	4.68	4.18	4.65	5.34
Feb.....	15.78	17.02	30.58	24 20	4.675	4.49	4.64	6.28
March...	16.29	16.35	32.90	23.82	4.675	4.37	4.60	6.31
April ..	16.76	17.13	30.90	24.98	4.675	4.31	4.71	6.67
May.....	16.34	17.20	29.37	25.76	4.181	4.44	4.53	6.88
June.....	15.75	16.89	30.50	25.85	3.901	4.43	4.29	5.98
July.....	.....	17.10	.....	29.63	.....	4.52	.....	5.82
August..	...	17.42	.....	31.53	.....	4.57	.....	5.65
Sept.....	.....	17.34	.....	32 74	.....	4.58	.....	5.50
October..	.....	16.94	.....	31.99	.....	4.575	.. .	5.32
Nov	.....	16.49	...	28.51	.....	4.575	.....	4.64
Dec	.....	15.85	.....	25.88	.....	4.64	.. .	4.66
Year.	.....	16.67		25.12	.....	4.47	.....	5 75

Commencing with March 17th, the prices given in the table for copper are the averages for electrolytic copper; this is the case for both 1899 and 1900. The average price for Lake copper for the year 1899 was 17.31c. For January, 1900, the average price of Lake copper was 16 33c.; for February, 16.08c.; for March, 16.55c.; for April, 16.94c.; for May, 16.55c.; for June, 16c.

Prices of Foreign Coins.

	Bid.	Asked
Mexican dollars	$ .48	$ 49½
Peruvian soles and Chilean pesos	.45	.46½
Victoria sovereigns	4.86½	4.88
Twenty francs	3.86½	3.90
Twenty marks	4.77	4.88
Spanish 25 pesetas	4.78	4.82

Financial Notes of the Week.

Business has settled down into a genuine midsummer dulness. The election has not much influence as yet, but the doubtful crop prospects and the Chinese trouble contribute to prevailing uncertainties. Money continues abundant in New York and rates low. Some further shipments—about $2,000,000—of gold to France were expected, but were not made, all special inducements having been withdrawn.

The silver market has receded, owing to speculative sales, but is fairly steady at the decline.

The statement of the United States Treasury on Tuesday, July 3d, shows balances in excess of outstanding certificates as below, comparison being made with the statement of the corresponding day last week:

	July 17.	July 24.	Changes.
Gold.....	$69,081,475	$70,798,822	I. $1,717,347
Silver.....	16,920,164	16,417,555	D. 472,609
Legal tenders.....	25,530,464	26,078,009	I. 487,545
Treas notes, etc...	766,104	723,615	D. 42,489
Totals	$112,308,207	$113,988,001	I. $1,679,897

Treasury deposits with national banks amounted to $95,576,588, showing a decrease of $7,638,302 for the week.

Imports and Exports of Metals.

Port.	Week, July 25. Expts.	Week, July 25. Impts.	Year 1900. Expts.	Year 1900. Impts.
*New York.				
Aluminum.....long tons	.....	.....	85	51
Antimony ore... " "	.....	.....	.....	1,685
" regulus.. " "	.....	.....	.....	625
Brass..... " "	3	.....	19	.....
Chrome ore..... " "	.....	.....	.....	1,501
Copper, fine..... " "	2,581	393	63,223	12,848
" matte.. " "	184	18	2,453	95
" ore..... " "	.....	.....	.....	7,536
" ash..... " "	.....	.....	.....	74
Ferro-Chrome.. " "	.....	.....	.....	31
Ferro-mangan'se " "	.....	.....	.....	342
Iron ore..... " "	.....	.....	.....	17,501
" pig, bar, rod " "	118	80	6,809	4,643
" pipe..... " "	469	.....	9,117	157
" plates, sheets " "	.....	.....	880	18
Lead..... " "	2,415	.....	44.156	39,281
" ore..... " "	.....	1,600	.....	9,700
" dross..... " "	.....	.....	.....	24
Manganese, ore.. " "	.....	.....	.....	8,614
Metals, old, scrap " "	115	.....	2,178	4,643
Composition... " "	.....	.....	1,025	185
Nails..... " "	155	.....	13,502	.....
Nickel..... " "	150	26	1,331	98
" ore. matte " "	.....	.....	.....	5,334
§Railr'd material " "	285	.....	711	2,428
Rails, old..... " "	.....	.....	1,554	518
Spiegeleisen..... " "	.....	.....	.....	1,562
Steel bars, plates " "	836	.....	14,184	11,340
" rails..... " "	1,836	.....	28,164	18
" wire..... " "	530	.....	15,609	.....
" not speci'd. " "	70	.....	5,039	1,765
Tin..... " "	20	.....	5,002	13,971
" and black plates " "	.....	48	830	18 900
Zinc..... " "	50	.....	409	172
" dross..... " "	55	.....	177	50
" ashes, skim " "	8	.....	740	20
" ore..... " "	1,795	.....	9,868	.....
†Baltimore.				
Chrome ore.....long tons	.....	.....		3,730
Copper, fine..... " "	493	.....	24,671	2,556
" matte... " "	.....	.....	.....	
Ferro-manganese " "	.....	.....	.....	155
Iron pig, bar, etc. " "	.....	500	2,935	20,311
" ore..... " "	.....	9,945	.....	261,089
" pyrites..... " "	.....	3,940	.....	22,429
Manganese ore.. " "	.....	5,502	.....	95,432
Metals, old & Rails " "	.....	.....	384	.....
Nails ..... " "	.....	.....	1,206	.....
Pipe, iron & steel " "	57	.....	3,306	.....
Silicon ..... " "	.....	.....	.....	85
Spiegeleisen..... " "	.....	.....	.....	659
Steel, bars, etc.. " "	120	.....	20,064	1,388
" wire ..... " "	.....	.....	705	95
" rails..... " "	4,151	.....	57,387	.....
Tin..... " "	.....	.....	.....	111
" and blackplates " "	.....	12	.....	1,688
‖Philadelphia.				
Antimony. ....long tons	.....	.....	.....	14
Chrome ore..... " "	.....	.....	.....	3,650
Copper, fine..... " "	.....	.....	2,552	.....
" ore..... " "	.....	.....	.....	21,697
Iron, pig..... " "	.....	403	.....	2,411
" ore..... " "	.....	5,000	.....	136,812
" pyrites..... " "	.....	.....	.....	87,455
Manganese ore.. " "	.....	2,000	.....	69,225
Spiegeleisen..... " "	.....	.....	.....	3,953
Tin..... " "	.....	.....	.....	243
" and black plates " "	.....	.....	.....	1,981
Zinc..... " "	.....	.....	67	.....
" ore..... " "	.....	.....	2,507	.....

*New York Metal Exchange returns. †By our Special Correspondent. § Not specified. §§ Monthly returns, Treasury Department. ‡ Report of Mr. John Stanton. ‖ Week July 20th. Exports include domestic and foreign metals.

Total United States.§§

Articles.	May, 1900. Expts.	May, 1900. Impts.	Year, 1900. Expts.	Year, 1900. Impts.
Antimony.. long tons	..	151	.....	973
" ore.... " "	.....	213	.....	1,287
Copper, fine, in all forms . " "	‡13,997	§83,745	‡73,643	21,393
Iron, pig & bar.. " "	968	5,994	41,374	35,589
" ore..... " "	2,841	81,525	2,961	299,487
Iron& steel plates " "	8,299	161	18,182	4,521
Iron & steel rails " "	45,616	294	144,439	763
" " wire " "	9,351	117	37,080	716
Lead, pigs, bars & old ..... " "	5	3	329	689
Lead in ore, etc.	6,657	5,647	35,565	34,971
Manganese ore and oxide.	.....	25,746	.....	181,472
Nickel "&matte	121	.....	925	.....
Nails, cut..... " "	1,071	.....	4,600	.....
" wire . ... " "	1,752	.....	16,441	.....
Quicksilver.... " "	18	.....	203	....
Steel, billets, rods, etc..... " "	1,573	2,235	25,542	15,943
Tin..... " "	89	3,251	216	14,772
" &black plates " "	85	6,181	1?7	28,588
Zinc ..... " "	2,757	38	10,698	471
" ore..... " "	2,944	.....	14,874	....

Import Duties on Metals.

The duties on metals under the present tariff law are as follows: Antimony, metal or regulus, ¾c. a lb. Lead, 1½c. a lb. on lead in ores; 2½c. per lb. on pigs, bars, etc.; 2½c. on sheet, pipe and manufactured forms. Nickel, 6c. per lb. Quicksilver, 7c per lb. Spelter or zinc, 1½c per lb. on pigs and bars 2c. on sheets etc Copper, tin and platinum are free of duty.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending July 21st, gives the following totals, comparison being made with the corresponding weeks in 1898 and 1897:

	1898.	1899.	1900.
Loans and discounts.	$634,945,900	$767,843,600	$797,853,900
Deposits	741,328,800	874,882,000	882,174,000
Circulation	14,434,300	13,603 400	24,225,700
Reserve:			
Specie	167,641,500	173,653,800	171,381,700
Legal tenders	60,702,700	57,122.300	73,243,700
Total reserve	$228 344,200	$230,776,100	$244,625,400
Legal requirements.	185,332,250	218,470,500	220,543,500
Balance, surplus	$43,012,000	$12,305,500	$24,081,900

As compared with the previous week, this year, the statement shows increases of $1,681,100 in specie, $2,111,900 in legal tenders, $4,121,775 in surplus reserve and $747,100 in circulation; decreases of $1,315,100 in deposits and $3,381,100 in loans.

The following table shows the specie holdings of the leading banks of the world at the latest dates covered by their reports. The amounts are reduced to dollars, and comparison is made with the holdings at the corresponding date last year:

	1899.		1900.	
Banks.	Gold.	Silver.	Gold.	Silver.
N.Y. Ass'd..	$173,653,800	.....	$171,381,700	.....
England....	161,094,755	....	157,441,775	.....
France ...	382,349,000	$241,579,140	434,632,475	$228,250,235
Germany...	142,835,000	73,585,000	141,720,000	73,005,000
Spain..	64,800,000	67,695,000	68,445,000	84,885,000
Aus.-Hun ..	151,890,000	53,065,000	188 840,000	48 885,600
Neth'l'ds ...	15,820,000	30,450,000	21,355,000	29.785,000
Belgium....	14,740,000	7,370,000	13 885,000	6,940,000
Italy	75,535,000	10,010,000	77.730,000	8,450.000
Russia	472,830,000	26,845,000	385,930,000	39,550 000

The returns of the Associated Banks of New York are of date July 21st and the others are of date July 20th, as reported by the Commercial and Financial Chronicle cable. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England reports gold only.

Shipments of silver from London to the East for the year up to July 5th, 1900, are reported by Messrs. Pixley & Abell's circular as follows:

	1899.	1900.	Changes.
India	£2,520,400	£3,047,127	I. £526,727
China	740,353	1,281,781	I. 541,428
The Straits	41,046	236,903	I. 195,857
Totals	£3,301,799	£4,565,811	I. £1,264,012

The increase to all Eastern countries, especially China, is marked this year.

Indian exchange has been weaker. There was only a small demand for Council bills in London, and those taken sold for an average of 15.94d. per rupee. Silver continues to be bought in London for India, partly on Government account.

Shipments of specie from San Francisco in June included $400,893 gold and $1,057,565 silver. For the six months ending June 30th the shipments were as follows:

	Gold.	Silver.	Totals.
Hongkong	$36,810	$3,968,097	$4,004,907
Shanghai	.....	1,186,699	1,186,699
Japan	15,863	63,530	79,393
Samoa	1,180	.....	1,180
Fanning Island	.....	1,000	1,000
Tahiti	.....	4,000	4,000
Central America	13,175	6,450	19,625
Total foreign	$67,028	$5,229,776	$5,296,804
Honolulu	258,000	53,800	311,800
New York	3,178,089	244,060	3,422,149
Totals	$3,503,117	$5,527,636	$9,030,753
Totals, 1899	9,371,642	2,352,887	11,724,529

The silver shipments this year included $480,376 in Mexican dollars in June and $2,816,990 for the half-year. Last year there was only $11,829 in Mexican dollars in June, and $381,840 in the six months. The shipments of gold to Japan were in gold yen.

The foreign merchandise trade of Great Britain for the six months ending June 30th is given by the Board of Trade returns as below:

	1899.	1900.
Imports	£236,736,876	£255,656,999
Exports	160,029,211	777,797,785
Excess, imports	£76,707,665	£77,859,214

The imports increased to £18,920,123, or 7.9%; the exports increased to £17,768,574, or 11.1%; leaving an increase of £1,151,549, or 1.5%, in the excess of imports over exports. The movement of gold and silver for the half-year was as follows:

Gold:	Imports.	Exports.	Excess.
1900	£12,706,842	£7,616,225	Imp. £5,090,617
1899	15,974,418	11,606,411	Imp. 4,368,007
Silver:			
1900	6,145,325	6,351,009	Exp. 205,684
1899	7,157,852	7,980,051	Exp. 822,199

Of the silver imports this year 86.1% were from the United States, against 65.2% last year. With a decline of £1,012,517 in the total imports, there was an increase of £620,485 in those from the United States.

Other Metals.

Daily Prices of Metals in New York.

July.	Sterling Exchange.	Silver. Fine oz. Cts.	Silver. London, Pence.	Copper. Lake, cts. ₱ lb.	Copper. Electrolytic ₱ lb.	Copper. London, £ ₱ ton.	Tin, cts. ₱ lb.	Lead, cts. ₱ lb.	Spelter. N. Y. cts. ₱ lb.	Spelter. St. L. cts. ₱ lb.
21	4.87⅞	61¼	28⅛	16¼ @16⅜	16 @16⅛	....	31½	3.95 @4	4.30 @4.35	4 12½ @4.15
23	4.87½	61¼	28⅛	16¼ @16⅜	16 @16⅛	73¼	35	3.95 @4	4.25 @4.30	4.12½ @4.15
24	4.87½	61⅛	28⅛	16¼ @16⅜	16 @16⅛	73¼	34	3.95 @4	4.25 @4 30	4.12½
25	4.87⅛	60¼	27¾	16¼ @16⅜	16 @16⅛	73	33	3 95 @4	4.25	4.12½
26	4.87⅛	60¼	27¾	16¼ @16⅜	16 @16⅛	72¾	33⅛	3.95 @4	4.25	4.10 @4.12½
27	4.87⅛	60¾	27⅞	16¼ @16⅜	16 @16⅛	72½	34	3.95 @4	4.25	4.10 @4.12½

London quotations are per long ton (2,240 lbs.) standard copper which is now the equivalent of the former g. m b's. The New York quotations for electrolytic copper are for cakes, ingots or wirebars; the price of electrolytic cathodes is usually 0.25c. lower than these figures.

Copper.—The market is quiet but firm. Consumption continues excellent, both here and abroad, and while buyers in this country appear to have covered their immediate wants, those in Europe are reported to be but poorly supplied. We learn of a number of inquiries from abroad for prompt shipment, which, however, it seems the refiners could not respond to, not having the copper to spare for early delivery. We quote Lake at 16¼@16⅜c.; electrolytic in cakes, wirebars and ingots at 16@16⅛c., in cathodes at 15¾@15⅞c.; casting copper nominal at 15⅞c.

The market for speculative sorts in London has not been very active, being somewhat affected by the political situation, which, however, has not influenced the business in refined copper. It closed last week at £73 5s. for spot, £73 7s. 6d. for three months, and opened this week at these prices. It declined on Wednesday to £73 for spot, £73 5s. for three months; on Thursday it was £72 15s. for spot, £73 for three months, and closes at £72 17s. 6d. for spot, £73 2s. 6d. for three months.

Refined and manufactured sorts we quote: English tough, £77@£78; best selected, £77 10s. @£78 10s.; strong sheets, £84 10s.@£85 10s.; India sheets, £82 10s.@£83 10.; yellow metal, 7d.

Copper imports into Great Britain for the six months ending June 30th are reported as below, in long tons:

	1899.	1900.
Copper ore	37,210	62.198
Matte and precipitate	38,170	43,096
Fine copper	30,045	37,338
Total, in fine copper	52,851	65 106

This shows an increase of 12,255 tons, or 23.2%, in the fine copper contained. The United States furnished this year 708 tons ore, 3,523 tons metal and 15,695 tons fine copper.

Tin.—A fair business has been done this week for both prompt and future shipment. Consumers generally are poorly supplied. Spot metal continued scarce the beginning of the week, but toward the end larger arrivals somewhat relieved the situation. Spot metal sold as high as 35c. and as low as 33c. Futures continually sold at a discount. At the close we quote spot 34c., August delivery 32½c.

The London market fluctuated considerably in a downward direction. It closed last week at £143 10s. for spot, £137 10s. for three months, opened £1 higher, and advanced on Tuesday to £145 15s. for spot, £139 10s. for three months. On Wednesday it was £144 for spot, £139 5s. for three months, on Thursday declined to £143 for spot, £138 for three months, and at the close the quotations are £144 for spot, £138 5s. for three months.

Imports of tin into Great Britain for the six months ending June 30th were: From the Straits, 9,857 long tons; Australasia, 1,429 tons; other countries, 2,805 tons; total, 14,091 tons. In 1899 the total was 12,943 tons, showing an increase of 1,148 tons, or 8.8%, this year. Re-exports of foreign tin were 8,729 tons, against 8,755 tons last year.

Lead.—A fair business is doing at the last prices. The market is without feature. We quote New York 3.95@4c., St. Louis 3.90@3.95c.

The European market is firmer, Spanish lead being quoted £17 12s. 6d., English lead 2s. 6d. higher.

Imports of lead into Great Britain for the six months ending June 30th were as follows, in long tons:

From:	1899.	1900.
Spain	49,906	41,869
Australasia	32,758	30,207
United States	15,844	18,560
Other countries	5,346	7,742
Totals	103,854	98,378

The total shows a decrease of 5,476 tons, or 5.3%. The lead credited to the United States is chiefly Mexican lead, refined here in bond.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is dull and prices are unchanged at 3.95c. Both Missouri and argentiferous lead are selling in a retail way only.

Spelter.—The market has not changed, but remains quiet and steady. There have been various inquiries from Europe for American spelter and it is believed that further export sales may be made. We quote St. Louis 4¼c., New York 4.25c.

The London market is cabled as £19 12s. 6d. for good ordinaries, 5s. higher for specials.

Imports of spelter or metallic zinc into Great Britain for the six months ending June 30th were 37,258 long tons, against 36,808 tons in 1899; an increase of 458 tons, or 1.2%, this year.

Silesian Spelter Market.—Mr. Paul Speyer writes from Breslau as follows: Business has been very dull and consumers are not buying. For the last few days there has been some activity in speculation and sales have been made at 19.50 marks per 50 kgs. f. o. b. cars at Breslau (equivalent to about 4.6c. per lb.). Shipments in May were satisfactory, including 3,805 metric tons to Austria-Hungary, 2,990 tons to Great Britain, 1,480 tons to France, 871 tons to Russia, 610 tons to Japan and 434 tons to Holland. Zinc sheets are in good demand, but no quotations can be given, the Union regulating prices according to markets and quantities. Exports were 448 tons to Great Britain, 287 tons to Denmark, 185 tons to Japan, 122 tons to Italy and 110 tons to Sweden. Zinc dust is quiet, with little demand.

Antimony.—There is no change. We quote Cookson's 10½c.; Hallett's 9½c.; U. S. Star, 9½c.

Nickel.—The price continues firm at 50@60c. per lb., according to size and terms of order.

Platinum.—Consumption is good and prices are strong. For ingot platinum in large quantities $18.20 per Troy oz. is quoted in New York.

Chemical ware (crucibles and dishes), best hammered metal from store in large quantities, is worth 72c. per gram, showing an increase of 1½c.

Quicksilver.—The New York quotation is unchanged at $51 per flask for large lots; for small orders $52.50@$54 is asked. San Francisco quotations are $51.50@$52 for local deliveries, and $46.50@$47 for export.

The London price continues £9 10s. per flask, with the same figure quoted from second hands.

Imports of quicksilver into Great Britain for the six months ending June 30th were 315,644 lbs. (3,295,621 lbs., 1899). Exports were 932,673 lbs. (1,078,774 lbs., 1899). This shows an excess of exports this year of 617,029 lbs., against an excess of imports of 2,216,847 lbs. last year.

Minor Metals and Alloys.—Wholesale prices, f. o. b. works, are as follows:

Aluminum.	Per lb.		Per lb.
No. 1, 99% ingots	33@37c.	Ferro Titanium (20%	$1.00
No. 2, 90% ingots	31@34c.	Ferro-Tungsten (37½)	35c
Rolled sheets	42c. up	Magnesium	$2.75@3
Alum.-bronze	20@23c.	Manganese (over 99%)	$1.05
Nickel-alum	33@39c.	Mangan'e Cop. (20% Mn)	32c.
Bismuth	$1.60	Mangan'e Cop. (30% Mn)	38c.
Chromium (over 99%)	1.00	Molybdenum (Best)	$1.45
Copper, red oxide	60c.	Phosphorus	45@47½c.
Ferro-Molyb'um (50%)	$1.05	Tungsten (Best)	.95c.
Ferro-Titanium (10%)	90c.		

Variations in prices depend chiefl on the size of the order.

LATE NEWS.

Mr. H. C. Hoover, to whose danger in the Chinese uprising we recently referred, is safe, having succeeded in reaching Shanghai about July 9th. We take much pleasure in publishing this information, for which we are indebted to the courtesy of Mr. D. P. Mitchell, of Spokane, who has received a telegram from Mr. Hoover.

A dispatch from Chicago, July 26th, says: "A conference of leading steel and Bessemer pig interests in this country was held to-day in the offices of the Federal Steel Company, in this city, in compliance with a call issued by President E. H. Gary, of the Federal Steel Company; President Schwab, of the Carnegie Steel Company, and Jos. G. Butler, Jr., representing the Bessemer Furnace Association. The object of this conference is to go over the trade situation for the purpose of determining if possible on some plan to improve it. The plan contemplated is to cut down production by closing every blast furnace controlled by the interests mentioned for one month. The subject was discussed at length, but no decision was reached, and the meeting adjourned until the next day."

By Telegraph.
(From Our Special Correspondent.)

Cripple Creek, Colorado, July 26th.—The output of the Cripple Creek District for June shows a total of 39,031 tons of ore, valued at $1,388,200, an average of $35.57 per ton. Of this total the smelting ore was 9,165 tons, value $641,550, or $70 per ton. The milling ore was 29,866 tons, value $746,650, or **$25 per ton.**

CHEMICALS AND MINERALS.

(For further prices of chemicals, minerals and rare elements, see page 120.)

New York. July 27.

Heavy Chemicals.—The market continues about as last week—quiet with very little demand for immediate deliveries. Prices are steady. For future delivery orders for bicarb. soda are being booked on basis of quotations below. Caustic soda for later shipment is still bought at $1.85 per 100 lbs. f. o. b. works. Bleaching powder is easy in price. Chlorate of potash is stronger.

We quote per 100 lbs. as below:

Articles.	Domestic.		Foreign.
	F.o.b. Works.	In New York	In New York.
Alkali. 58%.	80@85	95@$1.00	85@90
" 48%.	85@90	$1.00@$1.05	1.02½@1.05
Caustic Soda, high test	$1.90@$2.00	2.25@2.30	$2.50@2.55
powd. 60%	.....	3.00@3.25	.....
70@74%.	.....	3.25@3.50	.....
98%.	.....	3.50@4.00	3.75@4.00
Sal Soda	70@80.	.....	67½@70
" conc	1.45@1.75	.....	1.75
Bicarb Soda.	1.25@1.37½	.....	2.25
" " extra	3.25@3.50	.....	.....
Bleach Pdr., Eng. prime.	.....	.....	1.70@1.75
other br'nds.	.....	.....	1.45@1.60
Chl. Pot cryst	.....	9.12½@9.25	10.00@10.25
" powd.	.....	9.25@9.50	10..5@10.50

The Castner Electrolytic Alkali Company is offering in London an issue of £200,000 in 5% debentures. This company has been formed to acquire the property and the buildings, plant and machinery recently erected at Niagara Falls, and the Castner patents for the United States and Canada, and to carry on the business of manufacturers of caustic soda and bleaching powder under the Castner electrolytic process. The purchase price to be paid by the company to the Mathieson Alkali Works (the vendors) is $2,000,000, to be satisfied by the allotment of the whole of the ordinary share capital. The purchase price includes the stock-in-trade and goodwill. The present issue is made to provide funds to erect further plant and increase the works from their present capacity of 2,000 E. H. P. to at least 6,000 E. H. P., which it is estimated will cost £150,000, leaving a margin for ample working capital.

Acids.—Business has been generally in small lots. Sulphuric contract deliveries are better. Blue vitriol is easy. Carbolic is strong and importers ask 23@24c. per lb. in drums.

Quotations as below are for large lots delivered in New York and vicinity, per 100 lbs. unless otherwise specified.

Acetic, No 8 in lbs	$1.62½	Nitric, 36°	$3.87½
Blue Vitriol.	4.62½@4.75	Nitric, 38°	4.12½
Aqua Fortis, 35°	3 62½	Nitric, 40°	4.37
Aqua Fortis, 38°	3 87½	Nitric, 42°	4.75d.
Aqua Fortis, 40°	4.12½	Oxalic	5.75@5.87½
Aqua Fortis, 42°	4.50	Sulphuric, 66°	1.20
Muriatic, 18°	1.20	Sulphuric, 60°	1.05
Muriatic, 20°	1.35	" bulk 50° ton	14.00
Muriatic 22°	1.50		

Argentine, Kan., is to be quite an important center in this line. The Southwest Chemical Company has large sulphuric acid works there, and now it is understod that a large addition is to be made to the copper sulphate plant of the American Smelting and Refining Company there.

Brimstone.—Quotations remains unchanged on a light business. Spot best unmixed seconds are quoted at $21@$21.50 per ton; shipments in July, $21, and August to September, $20.50@$20.65. There is nothing new to report.

Pyrites.—The market is quiet, with no changes to be noted.

We quote: Mineral City, Va., lump ore, $4.75 per long ton (basis 42%), and fines, $4.20. Charlemont, Mass., lump, $5.50, and fines, $5. Spanish pyrites, 13@15c. per unit, according to percentage of sulphur contents, delivery ex-ship New York and other Atlantic ports. Spanish pyrites contain from 46%@51% of sulphur; American, 42%@44%.

Fertilizing Chemicals.—Demand for the leading ammoniates is fair.

Sulphate of ammonia, gas liquor, for shipment, holds at $2.72½@$2.75 per 100 lbs., and on spot at $2.80@$2.82½. Large sales of blood are noted at $1.80@$1.85 per unit f. o. b. Chicago. Tankage is worth $1.75 and 10 per unit f. o. b. Chicago. Other quotations are: Fish scrap, wet, $11@11½ per ton, and dry, $20@$23 f. o. b. factory; domestic steamed ground bone, $20@$22 per ton, as to quality; azotine, $1.90@$2 per unit; bone black, spent, $15@$16 per ton.

Nitrate of Soda.—The market continues steady, without quotable change.

Phosphates.—We cannot report anything special in the trade this week. Reports from Tennessee are that mining is still unfavorably affected by the weather.

The Jacksonville & Southwestern Railway, recently completed from Jacksonville to Newberry, in Florida, 86 miles, has already begun carrying phosphate. The company claims to have made traffic arrangements with several railroads whereby the miners can ship either to Fernandina, Brunswick or Savannah.

Phosphates.—There is nothing new in the market, and not much new business is in sight. Tennessee people are complaining of dull trade, high freights and bad weather.

Messrs. N. Maine Bateson & Company report that the shipments of Tennessee phosphates through the port of Norfolk up to date have been 555 tons by steamer "Glenlochy" to London.

Quotations on phosphate rock are as follows:

Phosphates.	Per Ton F. o. b.	C. i. f Un'd Kingdom or No Sea Ports.	
		Unit.	Long ton.
*Fla hard rock (77@80%)	$7.50@8 00	7¼@8d	$12.09@12.48
*Fla. land pebble (68@73%	4 35	6¾d	9.45
*Fla Peace River 58@63%)	3.00@3 50	6½d	7.80
†Tenn. rock 78%, export.	4.00@4.50	7d@7¼d	10.92@11.31
†Tenn..... 78% domestic.	3.50@3 50	.....	.....
†Tenn.....75% "	3.00@3.25	.....	.....
†Tenn .....72% "	2.65@2.75	.....	.....
‡So. Car. rock, crude....	4.00	.....	.....
§So. Car. rock, dried.....	4.50	.....	.....
Algerian, rock...(63@67%	.....	6¾d	9 05
Algerian, rock...(53@53)	.....	6 ?d	7.80
Christmas Isle...(83@85%	.....	8½d	14.03
.....	.....	.....	.....

* Fernandina. † Mt. Pleasant. ‡ At mines. § On vessels, Ashley River.

One of the biggest civil suits ever instituted in the State of Florida has just been brought in the Circuit Court of Polk County, by Tampa lawyers, in the interest of a Boston client, says the Savannah "News." The plaintiff in this suit is Dr. W. S. Bryant, a capitalist of the Bay State. He brings his suit against Mr. Herbert N. Smith, also of Boston, to recover the title to a large extent of phosphate lands in Polk County.

Liverpool. July 11.

(Special Report of Joseph P. Brunner & Co.)

With the exception of an improvement in sulphate of ammonia, there is little of interest to report with regard to the chemical market. According to the Board of Trade returns, the following are particulars of exports of alkali and bleach for the month ending June 30th last, viz.:

	Alkali.	Bleaching Powder.
Total exports to all quarters, cwts....	285,641	77,439
Exports to United States alone, cwts.	45,671	49,800

As compared with the corresponding month of 1899, the total shipments show a falling off amounting to rather more than 9% in the case of alkali, and slightly over 31% in the case of bleaching powder. Considering the very heavy shipments during the first four months of this year, the shrinkage last month is hardly surprising. Soda ash quiet, without change in price. Quotations depend upon export market, the range for tierces being about as follows: Leblanc ash, 48%, £4 15s.@£5 per ton; 58%, £5 5s.@£5 10s. per ton net cash. Ammonia ash, 48%, £4 5s.@£4 10s. per ton; 58%, £4 10s.@£4 15s. per ton net cash. Bags 5s. per ton under price for tierces. Soda crystals keep very steady, £3 2s. 6d. per ton less 5% being generally quoted for barrels, or 7s. less for bags, with special terms for a few favored markets. Caustic soda is very firm at the following range: 60%, £9 5s.; 70%, £10 5s.; 74%, £10 15s.@£10 17s. 6d.; 76%, £11 5s.@£11 10s. per ton net cash.

Bleaching powder dull and lifeless at nominally about £6 10s.@£6 15s. per ton net cash for hardwood packages, buyers still holding aloof.

Chlorate of potash in retail request and 4d. per lb. net cash is about nearest value.

Bicarb. soda without special feature and selling at £6 15s. per ton less 2½%, for the finest quality in 1 cwt. kegs, with usual allowances for larger packages, also special quotations for certain markets.

Sulphate of ammonia after touching £10 15s., has rallied again and £11 2s. 6d.@£11 5s. per ton less 2½% is now nearest value for good gray 24 to 25% in double bags f. o. b. here. There is a fair inquiry, but it is difficult to find sellers at the moment.

Nitrate of soda selling rather more freely, while quotations range from £8 to £8 7s. 6d. per ton less 2½% for double bags f. o. b. here, as to quality.

MINING STOCKS.

Complete quotations will be found on pages 117 and 118 of mining stocks listed and dealt in at:

Boston.	Philadelphia.	Montreal.
Colo. Springs.	Salt Lake.	London.
Denver.	San Francisco.	Mexico.
New York.	Spokane.	Paris.
	Toronto.	

New York. July 27.

The stock market has been dull and rather irregular. There was little call for copper shares, and Amalgamated was quoted to-day at $87; British Columbia Copper, $11; Tennessee, $15½; California Copper, $1¼.

The only call this week has been for the Cripple Creek stocks, Elkton selling at $1.40, payable at $1.27, and Cripple Creek at 13½c. In other Colorado stocks there were sales of Argentum-Juniata at 25c. Mollie Gibson brought 26c.

No notice was taken of the Comstock, beyond the usual perfunctory call of the list.

In the California stocks there was a sale of Standard Consolidated at $4.15, while Brunswick Consolidated brought 12@13c.

Flemington Coal and Coke was quoted at $23@$25; Virginia Coal, Iron and Coke at $5@$6; Pittsburg Coal common at $23, and preferred at $80@$81. There was little done in the coal stocks, and iron shares were also dull.

Boston. July 25.

(From Our Special Correspondent.)

The week opened with some show of activity and a buying demand that might be considered fair for the season. It really looked as if the public was beginning to take an interest in stocks again. The revival was of short duration, however, and the market has subsided into dullness again, with little but professional trading done.

In the Michigan coppers Calumet & Hecla was quoted at $745; Tamarack, $197; Quincy, $132; Osceola, $67½; Wolverine, $39@$39½; Baltic, $19. There was some show of demand for the minor stocks.

The half-yearly dividend of the Quincy Mining Company has just been announced; it is $4, while that paid in February was $5, and in August of last year $6. There is some disappointment, but if the drop is made, as stated, to leave the company funds for its new machinery and development work, the policy is a good and conservative one.

In the blind pool group Boston & Montana was quoted at $301; Butte & Boston, $65; Parrot, $41@$41½; Arcadian, $21. The trading was entirely inside business.

The gold stocks did not receive much attention. Centennial-Eureka brought $23 and Cochiti $8½.

A plan for the reorganization of the Pioneer Gold Mining Company has been agreed upon by the directors and a circular embodying the plan is now being sent to the stockholders. The plan was drawn up by a committee of three stockholders, one of whom was Joseph M. Cox, who opposed the reorganization at the meeting last May. The plan is precisely the same as that upon which the stockholders voted at Helena, Mont., May 31st last, except that it provides that 20c., instead of 25c., be paid by present stockholders who exchange the stock of the present company for that of the new, and that 30c. more may be called later. The next meeting of the stockholders will be held at Helena August 16th.

In the general list Dominion Coal sold at $38½@$38 and New England Gas and Coke at $16½. United States Oil brought $18½ and Agricultural Chemical $23. The close was dull and rather weak.

Colorado Springs. July 21.

(From Our Special Correspondent.)

The mining stock markets of the State closed to-day in considerably better form than the opening of the week found them. Trading was confined within legitimate bounds. The week opened unsatisfactorily and the level of prices sunk until Wednesday, when a reaction occurred.

Elkton was the leading figure during the latter part of the week. These shares sold up to $1.51, the highest range reached since the reorganization a month and a half ago. Gold King, another prominent dividend payer, it is reported, is about to be sold for $2,000,000. No official confirmation is at hand. The shares sold up to $1.40 a share, the highest ever paid for them. Argentum Juniata, a silver proposition of Aspen, is attracting attention through the finding of wire gold in the 1,000 ft. workings. The stock fluctuated from 30 to 23 and back to 26 to-day.

Pharmacist, Gold Hill, Kitty Gold, Robert Burns, Mariposa, Pointer and Mollie Dwyre were prominent prospect stocks which received attention at the hands of the speculating element among the traders. There is one stock, a cheap product, which the buying public should be warned against and it is Klondike. These shares have been traded in very extensively during the past two months. The capital stock has been over-issued and the affairs of the company are in a bad way.

G. W. Milton of Cripple Creek has filed a suit in the district court of that place for 20 acres of the Wilson Creek placer, a portion of the Independence group which was sold to the Stratton's Independence, Limited, of London, for $10,000,000. He claims to hold a contract alleged to have been entered into between a certain party of whom he is the assignee and Sam Strong, the locator of this placer, involving the west 20 acres of this tract. The placer was later in 1893 sold to W. S. Stratton. T. A. Rickard, the American manager of the English corporation, to-day denied the allegation that the contract was known at the time the sale was made in London. He furthermore denies its validity.

The case is not taken seriously among mining men of this city.

The week's trading upon the exchanges of this city was 5,984,000 shares of a cash value of $715,000.

Salt Lake City. July 21.

(From Our Special Correspondent.)

Trading in Utah mining shares has been better the past week, but not sufficiently so to encourage the hope of a lasting improvement. The drop of the settling price of lead to $3.87½ had a softening tendency and influenced outside orders, though the quick recovery in Daly-West shows that the lead market cuts but a small figure when the mine shows a marked improvement. Very little is doing in the golds and but slight interest is taken in the consolidation of the De La Mar and Mercur mines, which is scheduled to be consummated to-day.

Centennial-Eureka paid the regular quarterly $100,000 dividend yesterday. There is no inclination among local holders to part with their shares. Dalton holds its new strength, though it is probable that another assessment will be levied before any ore shipments. Daisy had a great spurt, based on the hope of the receiver starting up the mine and mill, but there is small likelihood of this occurring. Dexter is higher and stronger, due, it is said, to an adjustment of family friction. Mr. McKenzie, the new manager, knows the ground thoroughly. Galena has levied a 5c. assessment. Grand Central seemingly is in better favor.

Lower Mammoth closes several points above last Saturday. Mammoth strengthened on the announcement of the $20,000 dividend yesterday, payable August 1st. Northern Light hit the toboggan the middle of the week. To-day an assessment of 2c. is levied.

San Francisco. July 21.

(From Our Special Correspondent.)

We have the old story of a dull market with limited trading on small fluctuations. The only incident of the week was the bringing forward of Silver Hill, a stock little heard of lately. This was sold up to 64c. at one time.

A new crop of assessments is coming on, but nothing special has been devised to help in securing their payment.

Some quotations noted are: Consolidated California & Virginia, $1.50; Caledonia, 90c.; Confidence, 70c.; Ophir, 65c.; Silver Hill, 55@60c.; Hale & Norcross, 25c.; Gould & Curry, 25c.; Yellow Jacket, 12c.

At the Oil Exchange business was good. The prospects are coming more into favor. A sample of these is Independence, which was much traded in at about 15c. Home oil sold at $4.30.

London. July 10.

(From Our Special Correspondent.)

During the past week the mining market has been very dull, and in the South African section there has been absolutely no business at all The mining community have still to wait a time before operations can be recommenced, and in the meantime the London market is doing nothing but wait.

There has been some activity in the West Australian section, where the quotations have been advanced considerably. This is not a sign that any good news has been received, but that the leading promoting houses have thought fit to support their market by trapping the professional bears. The Associated quarrel among shareholders and directors still continues, and the report just issued refers entirely to this part of the business and omits all mention of the future prospects of the mine.

The diamond industry of South Africa has naturally got into operation again earlier than the gold industry, as the Kimberley District was the earliest to be relieved. Signs of a revival have already become evident by the purchase by the De Beers Company of the Bultfontein, Alexandersfontein and Dorstfontein estates from the London & South African Exploration Company and the Kimberley Diamond Mining Company. These estates cover over 33,000 acres and include much land in the Kimberley and Beaconsfield townships, as well as the Dutoitspan and Bultfontein mines. In order to raise the necessary capital to purchase these properties a new series of 4½% debentures are being issued, amounting in all to £1,750,000. Of these debentures £1,183,260 are being alloted to the vendor companies and the remaining £566,740 is being offered for public subscription. The purchase price was £1,725,000, so that £25,000 will be available as additional working capital. The London & South African Exploration Company has paid dividends regularly for 20 years, and original shareholders have received back their money 30 times over. The capital is only £50,000 and the present income is between £60,000 and £80,000 a year. The present amalgamation and recapitulation therefore puts shareholders in the London & South African Company on a market basis and on a level with the De Beers holders. They will be able much more readily to realize their holdings and at the same time if they desire to continue they will find their security spread over a much greater area.

As a contrast to this successful company may be mentioned the Otto's Kopje, which works in the same district. This company has never done much good, though a great deal of money has been spent on it. It has already twice been reconstructed and now it has been reconstructed again. This time the new money is mainly wanted to make good the damage due to the war, for the property is on the outlying districts where the fighting was thickest. Whether or not the third reconstruction is advisable from a mining point of view is not quite clear, but the shareholders have not lost hope and are cheerfully putting up more money.

Among American mines Stratton's Independence continues to occupy a foremost place, and there are many purchases made by the public. I understand that the directors were in favor of treating their own ores instead of shipping to smelters and chlorination works, but this idea has been given up. But on studying the question on the spot this appeared to be a useless expenditure, as very favorable contracts could be made with the customs people. Another point worth mentioning in connection with the position of this company on the London market is that the reserves have increased since the flotation of the company. It has been often said in London that the mine lives solely on its reserves and that no new development work has been done. When the company was floated in May, 1899, there were 70,000 tons in sight, valued at £1,386,786. Since then 38,000 tons have been taken out in 14 months, so that a considerable amount of the original ore has still to be treated. During this time, however, a great deal of development has been done, and though the class of ore opened up is not of the high grade of the other, there is plenty of margin left for profits. The amount is given at 250,000 tons of a value of over £2,500,000. There is also an unexplored region adjoining the Gold Coin where a similar formation is found.

Another Cripple Creek property, the St. Patrick, has been introduced in England, or rather Scotland, lately. Mr. W. Weston is the sponsor, and several Glasgow and Perth people are putting up the money. No public subscription has been invited and no report issued, so that information as to the property from local sources will be of interest to British readers.

The group of companies issued some years ago by the Mining and Financial Trust of London are in the reverse of a flourishing state at present. The De Lamar Company working the mine of that name in Idaho reports that its payable ore is nearly exhausted and that efforts to secure another property are so far unavailing. The Elkhorn Company originally working a mine of that name in Montana, and afterward another at Leadville, has disposed of all its property and is looking for something else. The King of the Hills Company, which used to be the Harquahala of Arizona, and subsequently acquired properties in West Australia, has also had to confess a second failure. Altogether this group is in low water and has lost the place it used to have in London circles.

A few weeks ago I mentioned that Mr. Whitaker Wright had considered this the proper time to float a new company, Le Roi No. 2, in spite of the fact that the British America Corporation and the Le Roi had so far been failures as dividend payers. It is rather surprising therefore to find that he has just issued another company to work claims in the same district. This time the name is the Rossland Great Western Mines, Limited, though other names that might be used are the East Le Roi and Le Roi No. 3, which, as a matter of fact, are used on the Stock Exchange. The claims to be acquired are the Nickel Plate, Golden Chariot, Great Western and Oronogo. As is usual, no great detail is given in the prospectus as to the mines and ores, but it is stated that the output could be maintained at 250 tons a day, and that the profits should supply a dividend of 20% per annum on the capital of £500,000.

The Castner Electrolytic Alkali Company of the United States is asking for subscriptions to its capital in this country. As is already well known, the company has been formed to purchase the Mathieson Alkali Works at Niagara Falls, N. Y., where the Castner process for producing soda and bleach is used. At present the company is offering £2,000,000 in debentures for subscription in England, but I am doubtful whether a very large response will be made. England has already the Castner Kellner Alkali Company, Limited, which works the same patents at Birmingham, and the amount of money already subscribed to that company is considerable. There are, however, some large users of the product on the board and eminent scientists have endorsed the process, so it is possible that a fair amount of money may be forthcoming.

The American market has seen an extraordinary burst of activity this week in Le Roi No. 2, the Whitaker Wright Company that was floated a few weeks ago. Reports have been circulated about a rich strike of 8-oz. ore in a vein 60 ft. wide, so the professional bears have been scrambling in madly. So great has been the rush to cover that the £5 shares have been pushed up to £12, and no doubt the insiders have made a grand profit. The truth or otherwise of the rumor of the rich strike is quite immaterial in the present case as far as the rise in quotations goes, and I can find no one who knows whether the rumor is founded on fact or not. The report of the riches of the strike seems, on general principles, to be exaggerated, but owing to the activity of the bears, heroic measures had to be taken by the insiders to scatter them.

Paris. July 15.

(From Our Special Correspondent.)

The mining stock market is dull and speculation seems for the present to be almost dead. Our people are very uncertain about existing complications in the East, and do not wish to incur any risks. At the same time there has been little fall in prices, and we do not look for any such overturn as our neighbors have had in Berlin.

One reason for the dullness is the comparative failure thus far of the Exposition. The large sums expended in preparing for the expected crowds by hotel and shopkeepers are bringing in small returns. The shares of the companies which were organized to supply entertainments and other adjuncts to the main Exposition promise no returns—or very small ones. These stocks are selling at heavy discounts, and the investors in them face large losses. August and September may bring better returns, but it is doubtful.

About 6,000 miners and officials engaged at the Anzin Colliery will shortly visit the Exposition with funds placed at their disposal by the company for that purpose; and this example has been followed by the Bruay Company, which will send to Paris for 5 days 15 men from each pit, who will each receive their usual wages, their railway fares and 100 fr. The mine foremen and engineers will also have leaves of absence and special funds given them.

It is hoped that other companies will follow these excellent examples. Azote.

DIVIDENDS.

NAME OF COMPANY.	Latest Dividend.			Total to date.
	Date	Per share.	Total.	
		$	$	$
†Amalgamated	July 30	2.00	1,500,000	6,000,000
Am. Car & Fdry, com	Aug. 1	.50		
Am. Car & Fdry, pf	Aug. 1	1.75		
†Am. Steel Hoop, pf.	July 31	1.75		
†Am. Tin Plate, pf	July 31	1 75		
†Bost. & Mont	Aug. 20	10.00	1,500,000	18,760,0 0
Buffalo Hump	Aug. 1	.10	30,000	185,000
Mammoth, Utah	Aug. 1	.05	20,000	1,750,000
†National Salt, com	Aug. 1	1.50		
†Nat'l Tube, com	Aug. 15	1.50		
†Parrot, Mont.	July 30	1.50	344,775	4,049,050
Quincy	Aug. 15	4.00	40 ,000	11,970,000
†Tenn. C., I., common	Aug. 1	2.00		
†Tenn. C., I. & RR., pf.	Aug. 1	2.00		

* Monthly. † Quarterly. § Semi-annual.

ANNUAL MEETINGS.

Name of Co.	Locat'n.	Date.	Place of Meeting.
Calumet & Hecla	Mich.	Aug. 15.	Boston.

ASSESSMENTS.

NAME OF COMPANY.	Location.	No	Delinq.	Sale.	Amt.
Alaska	Utah		Aug. 4	Aug. 25	.02
Alta	Nev.	65	July 10	July 31	.05
Andes	Nev.	51	Aug. 6	Aug. 27	.05
Brunswick Con.	Cal.		Aug. 20		.07
Cadmus	Cal.		July 25		.10
California Borax	Cal.	3	July 5	July 30	2 00
Copper Range	Mich		Aug. 6		3.00
Crown Point	Nev.	70	July 18	Aug 8	.05
Dutch	Cal.		July 30		.15
Father de Smet	S. D'k	3	July 9	Aug. 6	.25
Garibaldi	Cal.	2	July 9	July 31	.04
Geyser-Marion	Utah		June 27	July 30	.03
Goleta Con	Cal.	1	July 16	Aug. 15	.06
Gould & Curry	Nev.	90	July 10	July 31	.15
Great Bonanza	Utah		Aug. 3		.00½
Joe Bowers, Ext	Utah	8	July 20	Aug. 7	.01
Mammoth Garfield	Cal.		Aug. 4	Oct. 2	.17½
Mazeppa	Cal.		Aug. 7		.03
Meteor	Utah		July 10	Aug. 14	.00½
Mexican	Nev.	61	Aug. 14	Sept. 5	.15
Mount Diablo Oil Co.	Cal.			July 30	.01
National Con	Cal.	12	July 9	Aug. 1	.05
Occidental Con.	Nev.	35	Aug. 17	Sept. 11	.05
Old Susan	Utah	1	Aug. 2	Aug. 21	.00¾
Pacific	Utah	3	July 10	July 31	.00½
Reward	Cal.		July 23		.02
Rich Bar Gravel	Cal.	1	July 30	Aug. 22	.06
Ruby Hill	Utah	1	July 10	Aug. 10	.00½
Sierra Nevada	Nev.		Aug. 14		.15
Spanish Con	Cal.		July 16		.05
Tesora	Utah		July 12	July 28	.02½
Yellow Jacket	Nev.	4	July 26	Aug. 31	.10

STOCK QUOTATIONS.

NEW YORK.

Name of Company	Location.	Par val.	July 20. H.	July 20. L.	July 21. H.	July 21. L.	July 23 H.	July 23 L.	July 24. H.	July 24. L.	July 25. H.	July 25. L.	July 26 H.	July 26 L.	Sales
Alamo	Colo	1	1[illegible]	....	.15½	....	.15½	....	....	....	....	....	.40	....	2,000
Alice	Mont.	1	40	....	....	....	....	....	....	....	....	....	....	....	....
Amalgamated C	"	100	87.50	87 00	88 00	87 50	88 [illegible]	87.75	88 00	87.00	89.00	87 00	87. [illegible]	86 00	....
Anaconda, c	"	25	42 [illegible]	42.00	44.13	43 00	44 00	42.38	43 00	43.00	43.13	42.5	43.00	....	9,685
Anaconda Gold	Colo.	5	.38	....	....	....	....	....	....	....	....	....	....	....	....
Argentum-Jun.	"	2	21	....	24	....	.23	....	....	....	.25	....	....	....	4,500
Ariz. Lead	Ariz	25	15.00	....	....	....	....	....	....	....	....	....	13.00	....	....
Belcher	Nev.	3	.12	....	....	....	....	....	....	....	....	....	....	....	....
Best & Belcher	"	3	.17	....	....	....	....	....	....	....	....	....	....	....	....
Brit.Col.Copper	B. C.	1	11.25	11.00	11.50	11 00	11 00	10.75	11.25	10.50	11 00	10.33	11.0	10 50	4,000
Brunswick	Cal.	1	.18	....	....	....	....	....	....	....	.13	.12	....	....	....
Catalpa	Colo.	10	.26	....	....	....	....	....	....	....	....	....	....	....	....
Cholla	Nev.	3	.45	....	....	....	....	....	....	....	....	....	....	....	....
Chrysolite	Colo.	50	.14	....	....	....	....	....	.04	....	....	....	.04	....	80
Comstock T	Nev.	100	.18	....	.03	....	.03	....	....	....	....	....	.02½	....	2,500
" bonds	"	100	.18	....	....	....	....	....	....	....	....	....	.02½	....	....
Con. Cal. & Va	"	2½	1.35	....	....	....	1 50	....	....	....	....	....	....	....	10
Creede & C. C.	Colo.	1	....	....	....	....	13¾	....	....	....	13½	....	....	....	2,000
Crescent	"	10	.1	....	....	....	....	....	....	....	....	....	....	....	....
Cripple Cr. Con.	"	1	....	....	....	....	....	....	....	....	....	....	....	....	....
Daly	Utah	20	1 00	....	....	....	....	....	....	....	....	....	....	....	....
Deadw'd Terra	S.Dak.	25	4	....	.50	....	....	....	....	....	....	....	....	....	50
Elkton	Colo.	1	....	....	....	....	....	....	....	....	1.40	....	....	....	100
Golden Age	"	25	....	....	....	....	....	....	.05	....	....	....	....	....	1,000
Golden Fleece	"	1	.2[illegible]	....	....	....	....	....	....	....	....	....	....	....	....
Gould & Curry	Nev.	3	.2	....	....	....	....	....	....	....	....	....	....	....	....
Hal & Norc.	"	3	.26	....	....	....	....	....	....	....	....	....	....	....	500
Homestake	S Dak	100	50	....	....	....	....	....	....	....	....	....	....	....	....
Horn Silver	Utah	20	1 [illegible]	....	....	....	....	....	....	....	....	....	1 9[illegible]	....	....
Iron Silver	Colo.	20	.5[illegible]	....	....	....	....	....	....	....	....	....	.52	....	....
Isabella	"	1	....	....	1.25	....	....	....	1.25	....	1.47	....	....	....	1,100
King & Pemb.	Ont.	10	....	....	....	....	....	....	....	....	....	....	....	....	....
Lacrosse	Colo.	10	.14	....	....	....	.14	....	....	....	....	....	.14	....	500
Leadville	"	10	.05	....	....	....	....	....	....	....	....	....	.08	....	....
Little Chief	"	1	.17	....	....	....	....	....	....	....	....	....	.18	....	10
Mexican	Nev.	3	.12	....	....	....	....	....	....	....	....	....	.18	.16	....
Mollie Gibson	Colo	5	.25	....	.25	....	.25	....	.25	....	.26	....	....	....	4,500
Ontario	Utah	100	6 00	....	....	....	....	....	....	....	....	....	6 0[illegible]	....	....
Ophir	Nev.	3	.70	....	....	....	....	....	....	....	....	....	6[illegible]	....	600
Pharmacist	Colo	1	.1[illegible]	....	....	....	.12	....	....	....	....	....	....	....	1,500
Phoenix	Ariz.	1	.06	....	....	....	....	....	....	....	....	....	.07	....	....
Plymouth	Cal.	10	.1[illegible]	....	....	....	....	....	....	....	....	....	.10	....	....
Portland	Colo.	1	2 90	....	....	....	....	....	....	....	....	....	3 00	....	....
Potosi	Nev.	3	.12	....	....	....	....	....	....	....	....	....	.10	....	....
Quicksilver	Cal.	100	1.6[illegible]	....	....	....	....	....	....	....	....	....	1 30	....	....
do. pref	"	100	6.50	....	....	....	....	....	....	....	....	....	6.30	....	....
Savage	Nev.	2½	.1[illegible]	....	....	....	....	....	....	....	....	....	.17	....	....
Sierra Nevada	"	3	.24	....	....	....	....	....	....	....	....	....	.24	....	....
Smal Hopes	Colo	20	.4	....	....	....	....	....	....	....	....	....	....	....	....
Standard Con	Cal.	10	4.00	....	....	....	....	....	4.10	....	4 15	....	4 00	....	250
Syndicate	"	1	.09	....	....	....	....	....	....	....	....	....	....	....	500
Tenn Copper	Tenn	25	15 00	14 0	5 50	4 75	15 50	4.00	15.50	14.00	15 5[illegible]	14 00	15 00	14 0	....
Union Con	Nev.	2½	.16	....	....	....	....	....	....	....	....	....	.15	....	....
Work	Colo	1	....	....	....	....	....	....	....	....	....	....	....	....	....
Yellow Jacket	Nev	3	.1[illegible]	....	....	....	....	....	....	....	....	....	.18	....	....

COAL AND INDUSTRIAL STOCKS.

Am. Sm. & Ref.	.....	$100	38	37½	38	38¼	37½	37½	38¾	....	....	....	37	....	8,750
" " " pf	.....	100	88¾	88½	89	....	88¾	88¼	89¾	88¾	88	....	87½	....	1,557
Am.S & W Con	.....	100	34¾	33½	35	34½	36	34½	36	34½	35¼	34½	35¾	....	57,795
" " pf'rn	.....	100	75	73¾	43¾	74¼	75½	74½	74¼	73¾	74⅜	....	74¼	....	6 443
Am. Tin Plate	.....	100	23¾	23½	24	24	24¼	24	23	....	23	....	2 3[illegible]	....	4,750
" " pf	.....	100	....	....	....	....	79	....	....	....	....	....	.1[illegible]	....	3[illegible]
Col. Fuel & I	Colo.	100	34¼	33¼	34½	34	36	34¼	35¾	34½	34	33¼	....	....	10,970
Col. & H C.&I	"	100	....	....	34	....	15½	14¾	....	....	....	....	....	....	850
Federal Steel	.....	100	34¼	33¼	34¾	34½	36	34¾	35¾	34¼	35¼	33¼	33¾	....	29 1 00
" " pf	.....	100	67	66	67	....	68	67	67	67	67	66¾	66	....	8,2[illegible]
Fleming'n C &C	W.Va.	100	25	23	25	23	25	23	25	23	25	23	23	23	....
Int'l Pump	.....	100	29	29¼	29½	....	29¾	29¼	30	29¾	31	30	....	....	....
National Lead	.....	100	20¼	19	....	....	20¾	20¼	19¾	....	97¾	....	....	....	370
" " pf	.....	100	....	....	....	....	....	....	....	....	97¾	....	....	....	40
National Salt	.....	100	43	41	43	43	44	43	43¾	42	41	40	41	40	....
" " pf	.....	100	71	69	70	69	70	69	69	68	69¾	68¼	69¼	68½	....
Nat'l Tube	.....	100	46¾	46	46¾	46	46¾	....	46¾	46¼	46¾	46	46	....	6,061
Press. St. Car	Pa.	100	43¾	43¼	43¾	....	43¾	43	42	....	4.3¾	....	41¾	....	2,400
" " pf	"	100	74¾	74	75	....	....	....	74¾	....	....	....	73½	....	900
Republic I & S	.....	100	12¾	12	12¾	12¾	13	12¾	12¾	12¼	12¾	1 3[illegible]	....	....	3,75
" " pf	.....	100	54¾	54	....	....	54¾	54	54¾	54	54	....	54	....	4,3
Sloss-Shef.	.....	100	....	....	....	....	....	....	....	....	19¾	....	....	....	100
" " pf	.....	100	....	....	....	....	84	....	....	....	....	....	....	....	....
Stan. Oil of N J	.....	100	541	538	540	538	543	539	540	537½	547	537½	543	537	....
Tenn.C.,I.&R.R.	.....	100	69¾	67¾	71	69	75¼	71	74¼	72	71¾	7 3[illegible]	71	....	34,727
" " pf	.....	100	....	....	....	....	....	....	....	....	....	....	....	....	....
Union Cop	.....	100	2¾	2½	3	2¾	3	2¾	2¾	2½	2¾	2½	....	....	....
U.S.Cast I.P&F	.....	100	5	4½	4¾	4	4½	4	4¾	4½	4¾	4	4½	4	....
" " pf	.....	100	40	38	39½	37½	39¼	38½	39¼	38¾	39¼	38¾	38¾	37½	....
Va Coal & C	.....	100	6¼	5¾	6	5	6	5	6	5	6	5	....	....	....

Total sales, 2 8, 61. * Ex-div dend

PHILADELPHIA, PA.§

Name of Company.	Location.	Par Val.	July 19 H.	July 19 L.	July 20 H.	July 20 L.	July 21. H.	July 21. L.	July 23 H.	July 23 L.	July 24. H.	July 24. L.	July 25 H.	July 25 L.	Sales
Am. Alkali	.....	.....	2 25	.....	2 [illegible]	....	2.18	....	2.38	....	2.25	....	2.18	....	850
" " pf.	.....	.....	....	.....	.[illegible]	....	....	....	....	....	....	....	....	....	200
Bethlehem Iron	Pa.	.....	....	.....	....	....	....	....	....	....	....	....	57 00	....	227
Bethlehem S'l	"	$50	15.00	.....	15.25	15.0[illegible]	15 38	15 25	....	....	15.00	....	4 88	....	930
Cambria Iron	"	50	....	.....	....	44 00	....	....	....	....	....	....	44 2[illegible]	....	184
Cambria St'l	"	50	6 38	16 25	17 25	16.7[illegible]	17 5	17 13	17.38	....	17.13	16 88	6 25	16 13	2,516
Lehigh N. & S.	"	10	....	.....	2 38	....	....	....	2 5[illegible]	....	....	....	....	....	....
United Gas I	"	50	....	.....	115	....	115¼	1[illegible]	115¾	....	115¾	....	....	....	191

Total shares sold, 4,979. § Reported by Townsend, Whelen & Co., 309 Walnut St., Philadelphia

SAN FRANCISCO, CAL.

Name of Company.	Location.	Par value.	July 19	July 20.	July 2[illegible]	July 23	July 24	July 25.
Belcher	Nev.	$3 00	.15	.14	.14	.13	.15	.14
Best & Belcher	"	3 00	.21	.20	.21	.20	.20	.20
Caledonia	"	3 00	.90	.86	.86	.79	.80	.72
Challenge Con	"	3 00	.13	.13	.13	.13	.13	.13
Chollar	"	3 00	.16	.16	.16	.15	.15	.15
Confidence	"	3 00	.70	.65	.65	.65	.65	.68
Con. California & Virginia	"	2 50	1.45	1.45	1.45	1 45	1 45	1 45
Crown Point	"	3.00	.13	.12	.12	.12	.12	.12
Gould & Curry	"	3 00	.24	.23	.23	.23	.24	.23
Hale & Norcross	"	3 00	.23	.22	.21	.21	.23	.23
Justice	"	2 00	.10	.10	.08	.09	.09	.08
Mexican	"	3 00	.16	.16	.16	.15	.17	.16
Occidental Con	"	3.00	.08	.07	.07	.07	.08	.07
Ophir	"	3 00	.69	.67	.67	.66	.66	.66
Potosi	"	3 00	.13	.13	.11	.09	.10	.09
Savage	"	2.50	.14	.13	.13	.13	.13	.13
Sierra Nevada	"	3.00	.27	.26	.25	.25	.25	.25
Standard Con	Cal.	10.00	4 00	4 25	4 10	4 20	4 10	4 20
Union Con	Nev.	2 50	.19	.20	.16	.18	.18	.18
Utah Con	"	1.00	.10	.09	.09	.09	.09	.09
Yellow Jacket	"	3.00	.18	.11	.20	.20	.21	.20

CALIFORNIA OIL STOCKS.*

Name of Company.	No. of shares.	Par Val.	June 25. H.	June 25. L.	June 26. H.	June 26. L.	June 27. H.	June 27. L.	June 28 H.	June 28 L.	June 29. H.	June 29. L.	June 30 H.	June 30 L.	Sales
Blue Goose	5,000	$100	14.50	....	14 50	....	14.50	....	....	....	14 50	....	14 50	....	....
Buckhorn	16,000	10.00	4.00	....	4.00	....	4 00	....	4.00	....	4.00	....	4 00	....	....
Caribou	100,000	1 00	....	....	.25	....	.2	....	.25	....	.25	....	.25	....	....
Home	100,000	1 00	4.2[illegible]	4 05	4 2	4 10	4 3	4 20	4.3[illegible]	4 25	4 35	4.25	4.35	....	1,326
Homestake	10,000	....	....	....	12 00	....	14 00	12 50	15.00	13.25	....	....	....	....	....
National	100,000	5 00	....	....	6 00	....	6 10	....	6.10	....	6 10	....	6 10	....	50
Petroleum	100,000	1 00	.50	....	.50	....	.50	....	....	....	.50	....	.50	....	....
Pan Joaquin	100,000	1 00	3.10	....	3 10	3 00	....	....	3.10	....	3.10	....	3.05	....	....
Shamrock	100,000	2 50	....	....	....	....	.70	.60	.6[illegible]	....	1.25	.60	1.25	.65	50
West Lake	200,000	1.00	.65	....	.58	.55	.58	.53	.57	.55	.56	.50	.50	....	600
Yukon	100,000	2 50	.60	....	.75	.65	1.00	.65	1.25	....	1 25	.75	1 25	.76	100

*California and Producers Oil Exchanges. Total sales, 2,126 shares.

BOSTON, MASS.†

Name of Company.	Par val.	No. of shares	July 19 H.	July 19 L.	July 20 H.	July 20 L.	July 21 H.	July 21 L.	July 23 H.	July 23 L.	July 24 H.	July 24 L.	July 25 H.	July 25 L.	Sales
Adven'g'e Cons	$25	100,00	....	.....	....	....	....	....	....	.....	....	....	2 5[illegible]	....	25
Aetna, Cons. g	5	100 00	....	....	....	....	....	....	....	....	....	....	....	....	....
Allouez	25	80,000	....	....	....	....	....	....	....	....	....	....	....	....	....
Amal. Cop.	100	750,000	....	.....	86 63	85 00	87 0	87 00	88 00	....	88 25	88.00	88 00	87 50	978
Am. Z. L. & S.	25	60,00	....	....	....	....	....	....	....	....	....	....	....	....	200
Anaconda	25	1,20 0,0	....	....	....	....	....	....	9.00	....	....	....	....	....	....
Arcadian, c	25	150,000	20.38	20.2[illegible]	....	....	23.5	....	....	....	22 00	....	2[illegible] 0	....	505
Arnold, c	25	60,000	....	....	5.00	4 50	....	....	....	....	4 25	....	5 00	4.88	575
Ashbed	25	4[illegible],000	....	....	....	....	....	....	....	....	....	....	....	....	....
Atlantic, c	25	41,000	28 00	....	....	....	....	....	....	....	....	....	....	....	60
Baltic c	25	100,000	18 25	18 00	18 50	....	19 0	18 00	....	....	....	....	19 00	....	1,130
Bingham, c. g.	10	190,00	9.88	9.50	....	....	....	....	....	....	9 50	....	9 00	....	465
Bonanza. Dev.	10	800,000	....	....	....	....	....	....	....	....	....	....	....	....	....
Boston q	10	100,00	....	....	....	....	....	....	....	....	....	....	....	....	....
Bos. & Mon. Tr R	25	150,000	309	306	310	295	312	301	304	3 2	308	302	304	301	610
Breece	25	200,00	....	....	....	....	....	....	....	....	....	....	....	....	....
British Col.	5	200,000	10.75	....	11 25	....	....	....	1.2	....	....	....	....	....	430
Butte & Bost., c	10	200,000	....	....	64 00	63 00	63.00	61.0	64.0	63 0	36 00	....	65 0[illegible]	....	745
Cal. & Hecla, c	25	100,000	....	....	....	....	....	....	745	....	745	741	745	....	31
Centennial c	10	3[illegible],000	16 50	....	17 0	6 75	7 25	16 75	17 5[illegible]	....	18 00	17 38	4 88	....	1,6 0
Cent'l-Eureka	25	9[illegible],000	....	....	45 0	22.00	22 5	....	....	....	....	....	23 00	....	244
Central Oil	25	100,000	....	....	....	....	....	....	5.75	5 50	15 75	....	....	....	850
Cochiti, g	10	61,050	8 25	8 0	8.2	....	8 .5	....	8 13	....	9.2[illegible]	....	8.50	8 38	1,143
Cont Zn. Mg & Sm	10	157,000	....	....	....	....	....	....	2 50	....	....	....	....	....	10
Copper Range	10	110,000	13 00	....	3.5[illegible]	13 50	....	....	....	....	4 00	13.50	16 00	14.7[illegible]	1,744
Crescent, s	10	100,000	....	....	....	....	....	....	....	....	....	....	....	....	....
Dominion Coal	25	10[illegible],000	....	....	9 7	39 00	40 0	....	39.50	39 .0	89 0[illegible]	....	39 00	38 88	1,161
do. pref	100	150,000	114¾	....	....	....	....	....	....	....	....	....	....	....	50
Elm River	100	2[illegible],000	....	....	....	....	....	....	....	....	4 0	3 5[illegible]	3.50	....	761
Federal Steel	100	10[illegible],0[illegible]	33.5[illegible]	33 0	34 5	33.5[illegible]	34.63	....	35 00	34 [illegible]8	35 75	....	34 0	33 88	2 646
do pref	100	461,843	66.5[illegible]	66 1	67 00	66 5	67.00	....	67 50	67 0	68.38	67.75	68 75	....	1,58[illegible]
Franklin c	100	532,6[illegible]	....	....	13.75	....	13.50	13 25	....	....	....	....	3 50	13.25	215
Humboldt	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
I. Royal Con. c	25	100,000	26 50	....	27 00	26. 8	27.25	27 00	27.2[illegible]	26 75	29 0	27 50	27 50	....	1 45[illegible]
Mass Con	25	100 000	....	....	6 88	....	....	....	....	....	....	....	....	....	100
Mayflower	25	10 000	....	....	2 50	....	....	....	....	....	....	....	....	....	20
Melones	10	167,577	....	....	....	....	....	....	....	....	....	....	....	....	....
Michigan	25	100,0 0	3 7	3 50	....	....	....	....	....	....	....	....	....	....	30
Mohawk, c	25	100,000	....	....	....	....	....	....	16 50	....	17 0	....	16 75	....	840
Montana C. & C	5	100,000	....	....	....	....	.6.5[illegible]	....	7 00	....	7.00	....	....	....	145
N. A. G. Old Dreg	10	100,00	2 50	....	2.5	....	2.38	2.2	....	....	....	....	....	....	750
Old Colony	25	10 0,0 0	....	....	2 25	....	....	....	....	....	....	....	....	....	50
Old Dominion, c	25	150,000	18.50	....	8 75	8.5	19.2[illegible]	19 0	19.50	19 25	19 2[illegible]	19 00	....	....	1,020
Osceola, c	25	93,000	64.00	....	64 88	64 00	66.75	64 75	69 2[illegible]	66.00	68.25	67 2[illegible]	67.50	66 50	2 947
Parrot, s c	10	229,850	....	....	42 00	41.50	42 50	41 5[illegible]	42.50	41 88	42 5[illegible]	42.00	42.00	41 00	4,403
Pioneer	10	100,000	....	....	....	....	....	....	....	....	....	....	....	....	....
Quincy, c	25	100,000	....	....	141	140	142	141	136	....	136	*132	132	....	210
Rhode Island	25	100,000	....	....	3 5[illegible]	....	....	....	....	....	....	....	....	....	5
Santa Fe, g. c	10	240,000	4.7[illegible]	....	5 0	4 7[illegible]	5 00	....	....	....	5.25	5.00	5.25	5 00	1,711
Sea. Venabel, g	5	130,000	....	....	....	....	....	....	....	....	....	....	....	....	74
Tamarack, c	25	60,000	192	90	195	193	.95	....	....	....	197	....	197	....	50
Tecumseh	25	80, 00	....	....	....	....	....	....	2 5[illegible]	....	....	....	....	....	....
Tri Mountain	25	100,000	....	....	7.50	7.13	....	....	7 75	7 50	7.7[illegible]	7.25	7.50	7.25	730
Union C L	25	80,000	....	....	....	....	....	....	....	....	....	....	....	....	....
United States	25	250,000	....	....	....	....	....	....	....	....	....	....	....	....	....
U. S. Oil	25	100,000	8 0	....	8 00	....	15 0[illegible]	....	14.00	....	....	....	18 75	18 50	210
Utah Cons, g. c	5	3[illegible],000	27 .5[illegible]	....	28 .5	27.2[illegible]	28 50	28 2[illegible]	28 88	28 38	9 5	29 00	29.00	28 75	2,7.5
Victor	25	200,000	....	....	....	....	....	....	....	....	....	....	....	....	....
Victoria	25	100,0	....	....	....	....	....	....	2.0	1.75	2.00	....	2.00	....	2 5
Washington	25	60,0 0	....	....	....	....	....	....	....	....	....	....	....	....	....
White Knob	100	36,0 0	....	....	....	....	....	....	....	....	....	....	....	....	....
Winona, c	25	10,000	....	....	....	....	2 75	2 5	....	....	....	....	....	....	100
Wolverine, c	25	60,000	39 5	....	38.0[illegible]	....	38 5	38 00	38 50	....	39 2[illegible]	39.0	39.25	....	200
Wyandotte	25	100,00[illegible]	....	....	....	....	....	1 00	....	....	50	....	....	....	185

† Official quotations Boston Stock Exchange. Total sales, 34,629. * Ex-dividend.

SALT LAKE CITY, UTAH. July 21.

Stocks.	Shares	Par val	Bid.	Asked.	Stocks.	Shares.	Par val	Bid.	Asked
Ajax	300,000	$10	$0 40	$0.60	Horn Silver	400,000	$25	$1 05	$1 10
Alice	400,000	25	.20	1.00	Joe Bowers	700,000	1	.01½	.04½
Buckeye	....	....	....	....	Joe Bowers Ext.	4[illegible],000	¼	.00	11
Bullion-Beck & Ch	100,000	10	3 51	4 00	Little Pittsburg	400,000	5	.00[illegible]	00¾
Centennial Eureka	300,00	25	21 75	24 00	Lower Mammoth	150,000	1	.53	.56¾
Chloride Point	300,000	1	.05	....	Mammoth	400,000	5	2 18¾	2.25
Daisy	500,000	3	.01¾	.01¾	May Day	40[illegible],000	¾	.93¾	.93¾
Dalton	500,000	5	.03¾	.0 3[illegible]	Mercur	200,000	25	5 40	5 60
Dalton & Lark	2,500,00	1	.05	.07	Northern Light	400,000	5	0 3[illegible]	.04
Daly	150,000	20	1 28	1 32½	Ontario	150,000	100	6.12½	.....
Daly West	150,000	20	16 87½	16 95	Richmond An	500,000	1	....	....
Dexter	200,000	....	.9	1.00	Sacramento	1,000,000	5	.22	....
Eagle	250,00	1	.01¾	....	Silver King	150,000	20	47.50	52 00
Eagle & Blue Bell	250,000	....	.75	.86	Star Consolidat'd	500,000	1	.31	.34
Four Aces	250,000	....	.01¾	.02½	Sunbeam	250,000	1	.10	.15
Galena	100,000	10	.03¾	....	Sunshine	250,000	10	.04	.15
Geyser-Marion	300,000	....	.04	.07	Swansea	100,000	5	3.93	4 00
Golden Eagle	400,000	....	....	....	South Swansea	150,000	1	1 15¾	1 22½
Grand Central	250,000	....	5 68	5 69	Utah	100,000	1	.32	.....
Homestake	....	....	....	....	Valeo	200,000	10	.25	.27½

TORONTO, ONT.

Name of Company.	Par val.	July 18 B.	July 18 A.	July 19 B.	July 19 A.	July 20 B.	July 20 A.	July 21 B.	July 21 A.	July 23 B	July 23 A	July 24 B.	July 24 A	Sales
Ontario	1	.06½	.07¾	.....	....	.07	.07¼	.08	08¾	08¾	....	.08½	09½	64,800
Ham Reef	1	.08¾	.09	....	....	.0 ¼	.08¾	0[illegible]	.09¾	.08¾	.08¾	.08[illegible]	08¾	10 633
Olive	1	.15[illegible]	.18	....	....	.1[illegible]	18	15¾	.17	.16	.17	.15½	.17	1,5 0
British Col.:														
Alaska	1	.28¼	.3[illegible]	....	....	2[illegible]	.30	.28	.30	.28[illegible]	29	.23½	.30	19,730
Big Three	1	.01¾	.02¾	....	....	.[illegible]¾	.02¾	0[illegible]	.03¾	.02¾	.03½	.01¾	.02½	....
Black Tail	1	.12	.1[illegible]	....	....	.12	.14	12	16	.12	.15	12	.16	....
Caribou M'K	1	.8[illegible]	.87	....	....	.78	.78	7[illegible]	.80	.74	.80	.74	.80	....
Crow's N C	25	38 0	38 0	....	....	36.00	39 00	35.50	38 00	35.0[illegible]	38 00	35 50	38 00	....
Dardanelles	1	.02½	.03	....	....	.02½	.03½	.02½	.03	.02½	.03	.02½	.03	....
Deer Trail	1	.05	.05½	....	....	.05¾	0[illegible]	0[illegible]	.05¾	.05¾	0[illegible]	.05½	.05¾	5,500
Eve Star	1	.08	.09¾	....	....	04	.09¾	.09½	.09	.08½	09¾	.03½	.10	....
Fairview	1	01	.01[illegible]	....	....	.01	01[illegible]	.04	04¾	04	.01[illegible]	.04	.04¾	2,000

STOCK QUOTATIONS.

COLORADO SPRINGS, COLO.

NAME OF COMPANY	Par Val	July 16 B.	July 16 A.	July 17 B.	July 17 A.	July 18 B.	July 18 A.	July 19 B.	July 19 A.	July 20 B.	July 20 A.	July 21 B.	July 21 A.	Sales.
Acacia	$1	.87½	.88½	88½	.88¾	88¾	.89¼	89¼	.89	.88	.89¼	.88½	.88¼	24,000
Alamo	1	.15½	.16	14¾	1 ⅜	15	15¼	15¼	15¼	.14	.15	...	.15¼	14,000
Am Con	1	....	.07¾	.07¾	.08	.08¼	.09½	.08¼	.08½	.08¼	.09	.09	.09¼	40,000
Anaconda	1	.46	.46	.47	.46	.43	.47	.40	.43	.43½	.42	.40¾	.41¾	9,000
Anchor	1	.03½	....	.03¾	.04	.03¾	.03¾	.03¼	....	.03½	.03¾	.03	.03½	3,000
AnchoriaL	1	....	....	.87	....	....	....	84	....	.80	....	.80	....	
Antelope	1	.02¾	.03	.02¾	.03	.02¾	.03	.02¾	.03	.02¾	.03	.02¾	.03	14,000
Aola	1	.06	.06¼	.05¾	.06¼	....	.06¼	....	.06¼	.06	.06¾	....	.06¾	5,000
Arcadian	1	.04½	.05½	....	.04½	.05½	.04¼	.05½	.04¼	....	.04¾	....	....	
Are'ntam	1	....	.24½	.23	.24	.23½	....	.22½	....	.24¼	.26	.24¼	.26	18,000
Banner	1	.04¾	.05	.04¾	.05	....	.05	.04¾	.04¾	.04¾	.05	.04¾	.5	1,000
Battle Mt C	1	.28½	.29	.28¾	.28¾	.28¼	.29	.28¾	.28¾	.28¼	.28½	.28¼	.2-½	18,500
Ben Hur	1	.07¾	....	.07¾	.07¾	.07½	....	07 ⅜	.16¼	.07¾	.07¾	.07¾	.07½	
Black Bell	1	.12	.14	....	.14	.11½	.13	.11	.12½	.11¼	.12½	.11¼	.12½	2,000
Blue Bell	1	.10¾	.11¼	.11	.11¼	.11	.1 ¼	.11	....	.1 ¼	.11¼	.1 ¼	.11¼	1,000
Bob Lee	1	.05½	.05¾	.05¾	.06¼	.06¼	.06¾	.05¾	.06	.05¾	.05¾	.05¾	.06¼	88,000
Buckhorn	1	.06¾	.07	.07	.07¼	.07¼	.07½	.05¾	.06	.07¼	.07¾	.0 ¾	.0 ¾	25,000
Cadillac	1	.05	.06	....	.05¾	.02¼	.02¾	.02¾	.02¾	.02¼	.02¾	.02½	.02¾	20,000
Central City	1	.14¼	.14¼	.14¾	.14¾	.13¾	.13¾	.14¼	.1 ¾	.13¾	.14	.14¾	.15	207,000
Champion	1	.08	.08	.08	.08¼	.05	.08¼	....	.08¼	.08	.08¼	.08	.08¼	10,000
Chicolo	1	.03¾	.03¾	.03¾	.03¾	.03	.03¾	.03¼	.03¾	.03	.03¾	.03	.03¾	15,000
C.K.&N	1	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02½	.0 ¾	18440
C.C.Col'bia	1	.08½	.09	.08¾	.08¾	.03¼	.04¾	.03¼	.04¾	.08¼	.08¾	.08¼	.08½	6,000
C.C G Ext	1	.12	.12¼	.14¼	....	.12	.2 ¼	.2¼	.18	.2¾	.2¾	.12¾	.1 ¾	5,400
C.C & Man	1	.12	.12¼	.13	.1 ¾	.12¾	.12¾	.1 ¾	.12¾	.1 ¾	.12¾	.12¾	.12 ¾	112,000
Copper Mt	1	.05½	.05¾	.0 ¾	.0 ¾	.05¾	.0 ¾	.0 ¾	.05¾	.05¾	.05¾	.0 ¾	.0 ¾	64,000
Cr ede&CC	1	.14¾	....	.14¾	....	.14¾	.16	....	.15¾	.15	.15¾	.15	.15¾	1,000
C. C. Con.	1	.13¾	.1 ¾	.14¼	.1358	.13¾	.13¾	.13	.13¾	.13¾	.1 ¾	.13¾	.13¾	29,507
Dante	1	.12	.13¾	.13¼	.13¾	.13	.13	.13	.13¾	.14	.13¾	.14¼	.15	7,000
Den Molines	1	.07	.07¼	.07¼	.0 ¾	.07¼	.7¾	.07¼	.07¾	.07¼	.07¾	.07¼	.07½	18,665
Eclipse	1	.10	.10¾	.09¾	.10¼	.09¾	.10	.09¾	.03¾	.09¼	.09¾	.09¼	.09¾	25,000
ElktonCon	1	1.41	1.41¾	1.44	1.44	1.44	1.45	1.44	1.45	1.44¼	1.46	1.45	1.45	44,866
El Paso G	1	.40	.....	.41¼	.43	.42	.....	.4 ¾	.44	.43¾	.41	.42½	.43¾	19,662
Enterprise	1	.21¾	.....	.21¼	....	.21¾	.23	.21	....	.21	.....	.22	....	2,000
F Rawlings	1	.29 ¾	.30	.28	.30	.2 ¾	....	.27	....	.27¾	.....	.27	.29	6,000
Favorite	1	....	....	....	....	....	....	....	....	....	....	....	....	
Findley	1	.14¾	.15¾	.14¾	.5	.14¾	.14¾	.14¾	.15	.14¾	.15	.14¾	.15	1,000
Garf Con	1	.08¾	....	.08¾	....	.08	....	....	....	....	....	.08¾	....	
Golden Fl	1	....	....	....	.35	....	.35	....	.40	....	....	.39	.41	500
G ld Hill	1	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	197,000
G ld S w'n	1	.10¾	1.3¾	.10¾	.11	1.1¾	1.3¾	.10¾	.10¾	.10¾	.11¾	.10¾	.11¾	0,000
H ydan	1	.01¾	.02	.01¾	.02	.01¾	.02¼	.02	.02¾	.02	.02¾	.02	.02¼	2,000
Ida May	1	.32¼	.34	.3 ¾	....	.32¾	.32¾	.32	.34	.32	....	.3 ¾	.35	8,000
Indep't dce	1	.45	.46	.46	.47	.46	.47	4 ¾	.47¼	.6¾	.47¾	.4 ¾	.47	47,000
Ing Con	½	.20¾	2 ¾	....	.21	.20¼	.21	.2 ¾	2 ¼	.20¾	.21	.20	.21	2,000
Isabella	1	1.5 ¾	1.2 ¼	1.6	1.2 ¼	1.2 ¼	1.26	1.2 ¾	1.26	1.2 ¾	1.26	1.25	1.26	1,700
Jack Pot	1	5 ¾	.54	....	.56	.54	.56	.50	.52	.49¾	.56	.50	.56	500
Jose hine	1	.03¾	.0 ¾	.0 ¾	.03¾	.0 ¾	.0 ¾	.0 ¾	.0 ¾	.02¾	....	.02¾	.02¾	7,000
Kay West	1	.03¾	.04	.04	....	.04	....	.01	.04¾	.04	.04¾	.04	.0 ¾	14,500
Lexington	1	.18 ¾	.8¼	.19¼	.19 ¾	.18 ¾	.18¾	.18	....	.19¾	.8	.18 ¾	.5	64,000
Magner R	1	.05¾	.0 ¾	.05¾	.0 ¾	.0 ¾	.03 ¾	.04¾	....	.03¾	.04¾	.04¾	....	2,000
Mar aret	1	.2 ¾	.3	.02¾	.03	.02¾	.03	.02¾	.03	.03	.03	.03	.04	8,000
Margery	1	.03¾	.04	.03¾	.04	.03¾	.04	....	....	.03¾	.01	.03	.04	8,000
Mitona	1	.35	.36¼	.37	.37	.35	.35¾	.35	.35¼	.35½	.3	.36	.37	5,000
Midway	1	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	....	.06¾	.06¾	.06¾	.06¾	.06¾	7,00
M J T	1	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04	.04¾	.04¾	.04	.03¾	.04¾	2,000
Mobile	1	.04	.04¾	.04	.04¾	.04	.04¾	.04¾	.05¾	.03¾	.07	.03¾	.01	14,00
Moll Dwyer	1	.07	.07¾	.07¾	.0 ¾	.07¾	.07¾	.06¾	.06¾	.07	....	.07¾	.07¾	81,00
Mollie Gib	1	....	....	....	....	....	.25	....	....	....	.8¾	.2 ¾	....	2,000
Montezuma	1	.08	.09	.08¾	.09	.08¾	.08	....	....	.18	.09	.18¾	.19	2,000
Montreal	1	.17¾	.08¾	.07¾	....	.07¾	.08	.07¾	....	.17	.08	.07	.08	3,000
Moon A'er	1	.57	.60	.59	.60¾	.61	.61	.59	.60	.6 ¾	....	.59	.6¼	61	15,00
Morning S	1	.04¼	.4¾	.04	.04¾	.04¼	.04¾	.04¼	.04¾	.04¼	.04¾	.04¼	.04¾	27,000
Min Beauty	1	.09¾	.10	.09¾	.10	.09¾	.09¾	.9 ¾	.09¾	.9 ¾	.09¾	.09¾	....	15,00
Mt Rosa	1	....	.7	....	.74¾	....	....	....	....	.80	....	....	.83	
National	1	.1 ¾	.1.6	.11¾	.11¾	.1 ¾	1 ¾	.11	.1 ¼	.11¾	.11¾	.12½	.2¾	413,00
Nel ie V	1	.12	.12¾	.12¼	.12¾	1 ¾	1.2 ¾	.12	.2¾	.12¾	.2¾	.12¾	.12¾	4,000
New Haven	1	.08¾	.09	.08¾	.09	.08¾	.09	.68¾	.09	.09	.0 ¾	.09¾	.09¾	9,5
Olive'Bach	1	.07	.7¾	.7	.07¾	.07	.7¾	.06 ¾	.07	.06 ¾	.07	.06¾	.07	9,00
Oriole	1	.06	.06¾	.05¾	.06	.03¾	.06	.05¾	.05¾	.05¼	.05¾	.05¾	.0 ¾	12,00
Orphan	1	....	....	.13¾	.18¾	.18	....	.14¾	.15¾	.18¾	.19	.18¾	.9	54,00
Pel.can	1	.01	.....	.03¾	.03¾	.01	.03¼	.03	.03½	.03	.03¼	.03	.03¾	7,00
Pharmacist	1	.14¾	.14¾	.14	.14¾	.1.¾	.15¼	.14¾	.1 ¾	.15¾	.15¾	.14¾	....	116,50
Pilgrim	1	.1 ¾	.3¾	.1.¾	.3 ¾	.18¾	.13¾	.3 ¾	....	.3 ¾	.3¾	.1.¾	.18¾	3,00
Pinnacle	1	.2	.2¼	.21¾	.22	.0	.22	....	.2 ¾	.20	....	.21	....	
Port and	1	3.01	3.10	3.05	3.11	3.05	....	3.01	3.18	3.00	....	3.00	....	1,400
Prince Alb	1	.4 ¾	....	.04¾	.....	....	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.047¾	6,10
Princess	1	.06¾	.06¾	.06¾	.06¾	.06	.06 ¾	.6 ¾	.6¾	.06¾	.06¾	.06¾	.06¾	1,00
Progress	1	.05¾	.06	....	....	.06	.06¾	.05¾	.05¾	.06	.0 ¾	.06	....	41,00
Pythias	1	.03¾	.03¾	.06¾	.07	....	.06¾	....	.06¾	.06¾	.06¾	.06¾	.06¾	4,90
Raven	1	....	....	....	....	....	....	....	....	....	....	....	....	
Republic	1	.05¾	.06¼	.06¾	.06¾	.06¾	.06¾	.06¼	.06¾	.06¼	....	.06¼	.06¾	9,00
Robt Burns	1	.07	.07¾	.07¾	.08¼	.06¾	.07	.06¾	.06¾	.07	.07¾	.07¾	.07¾	32,00
R se Maud	1	.09¼	.10	.09¾	.10	.09¾	0	.09¾	.09¾	.09¾	....	.0	.09¾	.10	9,000
Rose Nic l	1	.14¾	.13¾	.12¾	.13	.12¼	.13¾	.12¼	.1 ¾	.13	.13¾	.1 ¾	.13¾	1,000
Silver Gold	1	....	.02	.01¾	.12	.01¾	.02	....	.02	.01¾	.02	.01¾	.02	1,00
Specimen	1	....	....	....	....	....	....	....	....	....	....	....	....	
Teresa	1	.03¾	.04¾	....	....	.07¾	.8¼	.07¾	....	....	.07¾	.07¾	.7¾	8,00
Trachyte	1	.07¾	.07¾	.7¾	.07¾	.07¾	.07¾	.07¾	.07¾	.07	.07¾	.07¾	.07¾	12,50
Uncle Sam	1	.04¾	.04¾	.04¾	.4¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.4¾	.4¾	10,00
Union	1	.40	.41	.40	....	.40	....	.41	.42	.40	....	....	....	
Va M	1	.10	.10	.10	.10¾	.10	.10¾	.09¾	.1 ¾	.10	.10¾	.0	.1 ¾	5,00
Vindicator	1	....	....	1.45	1.5	1.45	1.48	....	....	....	....	1.4	1.45	2,50
Work	1	.30	.3¾	.30	.3¼	.31	.3¾	.30	.30¾	....	.30	.29¾	.30	4,00
Zenobia	1	.15	1 ¼	.15	.16	.5	.16	.15	1.¾	.15	....	.15	.5¾	3,000

Colorad Springs Mining Stock Exchange. Total sales, 2,765,183 shares.

MONTREAL CANADA.*

NAME OF COMPANY.	Par Val	Week, July 2. H.	L.	Sales	NAME OF COMPANY.	Par Val	Week, July 3. H.	L.	Sales
Big Three	$1	.02	.01¾	17,000	Monte Christo	$1	.04¾	.03¾	1,500
Ca l'ornia	1	.09	.08¾	....	Montreal G F	1	.05	.03	4,000
Can Gold Fields	1	.07	.03¾	7,00	Mont eal-London	0.24	.25	.21	30,000
Decca	1	.05	.08	.....	Oregon	1	.21	.20	9,500
Dee Trail Con	1	.03¾	.04¾	.....	P yne	1	1.08	.90	....
Giant	1	....	....	.....	Rambler-Cariboo	1	2¾	.15	....
Golde Star	1	.13	.07¾	.....	Republi on	1	.95	.87	475
Gold Hill Dev	1	.13	.2	.....	Slocan-Sovereign	1	.21	.17	....
Knob Hill	1	.50	.33¾	2,500	Virtue	1	.68	.60	2,000
Majestic					War Eagle	1	1.55	.40	1.0

* Montre l Stock Exchange. Tot l sales, 89 075 shares.

MEXICO.

July 14.

NAME OF COMPANY.	No. of shares.	Last div'd	Prices Op'g	Prices Cl'g
Durango:				
Barradon y Cab	2,400	.....	$40	$50
Candelaria de Pan	1,200	.....	20	20
Capusays Guan	2,400	.....	15	12
Restauradora	10,000	.....	10	20
Guanajuato:				
Angustias	2,400	5.00	130	140
Cinco Senores y An	2,000	15.00	300	29
Guadalupe Hacie a	10,000	2.00	205	200
Trinidad, aviadora	2,000	.....	15	6
do. aviada	40	.....	15	16
Zona Minera de Pos	2,400	.....	6	8
Hidalgo:				
Amistad y Concord	9,600	1.47	15	19
Arevalo	720	.....	20	200
Bartolome de Med	2,000	2.00	65	70
Carmen	1,100	7.75	210	200
Las Ca Maravillas	800	.....	140	140
Pabellon	800	27.50	30	20
Hidalgo:				
Real del Monte	2,554	10 00	55	60
San Francisco He	6,000	3.00	145	100
Soledad	960	5 00	270	23
Sorpresa	960	1 50	28	26
Union Hacienda	2,000	5.00	230	220
Mexico:				
Coronas	500	.....	75	75
Esperanza y An	3,000	10.00	1 280	1,200
Michoacan				
Luz de Borda ava	4,000	.....	18	12
S. Luis Potosi:				
Concep. y An	2,400	.....	280	275
Zacatecas:				
Asturiana y An	3,000	10.00	175	170
Cabeson	2,400	.....	15	15
C'delar. de Pinos	1,500	.....	240	270
Palma de Somb	4,400	.....	30	40

DENVER, COLO.†

NAME OF COMPANY.	Par val.	July 16 B.	July 16 A.	July 17 B.	July 17 A.	July 18 B.	July 18 A.	July 19. B.	July 19. A.	July 21. B.	July 21. A.	Ju'y 21. B.	Ju'y 21. A.	Sales.
Alamo	1	15	....	....	....	....	....	....	....	....	....	....	....	
Anaconda	5	....	.45	....	....	.40	.45	.40	.45	.98¾	.42¾	.36½	.37	
Aola	1	....	....	....	....	....	....	....	....	....	....	....	....	
Arg J	1	....	....	....	....	....	....	....	....	.23	....	....	....	
C K & N	1	.02¾	.03¾	02¾	0 ¾	....	....	.02¾	.02¾	.02	.02¾	02¾	....	
Dictator	1	.02¾	.12¾	04¾	.12¾	02¾	.02¾	.02¾	.12¾	.02¾	.02¾	.04¾	01	23,000
El ton	1	....	....	....	....	....	....	....	....	1.4¾	....	....	....	
Find ev	1	....	....	....	....	14½	.15	....	....	....	....	.14½	.15	1,000
Gold S v'n	1	....	....	....	....	....	....	....	....	....	....	....	....	
Golden Age	1	....	....	....	....	....	....	....	....	....	....	....	....	
Independ'ce	1	....	....	....	....	....	....	....	....	....	....	.47¾	....	
I on Clad	1	.06	.07	.06	.06¾	.06	.06½	....	....	....	....	.07¾	....	2000
Isabella	1	....	....	1.26	1.26½	1 25	....	1.25½	1 25	1.25	1.26¾	.....	1 25¾	1,200
Magnet P'k	1	.05	.05¾	.05	.05¾	.05	....	....	....	....	....	....	....	1,000
National	1	.11¾	.12	....	....	.11¼	.12	....	.11	....	....	....	....	1,000
New Haven	1	.03½	.13	.08¾	.09¼	.08¾	.09¼	.08¾	.09¼	.09	.09¼	.09¼	....	2,000
New Zeal'd	1	....	.67	58¾	....	.58¾	.68¼	....	....	....	....	....	....	
Old G ld	1	....	.02	....	....	....	....	....	.02	....	....	....	....	
Omega	1	....	....	.06½	....	.007	.01	.0 6	.01	.006¾	.01	.0 6	.01	10,000
Ophir	1	....	....	....	....	....	....	....	....	....	....	.55	.9¾	
P ritan	1	.01¾	.01¾	....	....	.0 ¾	.01¾	.01¾	.01¾	....	....	.01¾	0 ¾	8,000
Union	1	....	....	....	....	....	....	....	....	....	....	....	....	
Vindicator	1	1.48	....	....	....	....	....	....	....	....	....	....	....	
Wh.of Fort	¼	.01	....	.01¼	0 ¾	01¾	.02	.0 ¾	....	.01¾	....	.01¾	....	11,000

† Official Quotations Denver Stock Exchange. Total sales, 59,2 0 shares.

PARIS.

July 6.

NAME OF COMPANY.	Country.	Product.	Capital Stock.	Par value.	Latest divs.	Prices Op'ning	Prices Closing.
			Francs.	Fr.	Fr.	Fr.	Fr.
Acieries de Creusot	France	Steel mfrs	27,000,000	2,000	75.00	1,840 00	1,860 00
" " Firminy	"	"	3,000,000	500	125.00	3,500 00	3,510 00
" " Fives-Lille	"	"	12,000,000	500	35.00	520 00	511 00
" " Huta Bank	Russia	Iron & steel		500		4,470 00	4,480 00
" " la Marine	France	Steel mfrs	20,000,000	500	50.00	1,645 00	1,635 00
Anzin	"	Coal				220.00	6,575 00
Bleo	Lower Cal	Copper		500	175.00	2,690.00	2,640.00
Bianask	Russia	Coal & Iron		500		866 00	830 00
Champ d'Or	S. Africa	Gold	3,375,000	25	3.75	38 00	37 00
Courrieres	France	Coal	600,000	500	70.00	2,885.0	2,800.00
Dombrowa	Russia	Coal		500	12.50	975 00	940.0
Donets	"	Steel				940.00	991.00
Dynamite Centrale	France	Explosives		500	20.00	430.00	41 0 0
Escombrera-Bleyberg	Spain	Lead		500	85.00	1,2 8 0	1,205 0
Fraser River	Brit. Col'mb	Gold		25		4 50	5.00
Huanchaca	Bo ivia	Silver	40,000,000	125	5.00	186 00	186 00
Laurium	Greece	Zinc & lead	16,300,000	500	80.00	58 .00	570 0
Malfidano	Italy	Zinc	12,500,000	500	50.00	1,200.00	1,160 0
Metaux, Cie. Fran. de	France	Metal d'lers	25,000,000	500	80.00	477 50	476 00
Mokta-el-Hadid	Algeria	Iron	18,312,500	500	40.00	1,200 00	1 154.00
Naphte Baku	Russia	Petroleum				823 0	820.00
Naphte, Le	"	"				1,300 0	1,295.0
Naphte Nobel parts	"	"				687.5	675.00
Nickel	N.Cal'd'nia	Nickel	10.000.000	250	10.00	485.00	46 .00
Penarroya	Spain	Coal, etc		500	95.00	2 700 00	2,77 .00
Rebecca	Colo'do,U.S.	Gold	5,000,000	25		4 00	3.75
Salines de l'Est	France	Salt		500	6.50	955 0	950. 0
Salines du Midi	France	" etc		500	25.00	975.00	980. 0
Vielle Montagne	Belgium	Zinc	9.000,000	80	36 .00	735.00	713.0

LONDON.

July 13.

NAME OF COMPANY.	Country.	Author ised capital.	Par value	Last dividend. Amt	Last dividend. Date.	Quotations. Buyers	Quotations. Sellers.
			£ s. d.	s.d.		£ s. d	£ s d
Alaska Goldfields	Alaska	£300,000	1 0 0	2 1	Mar., 1899	12 6	17 6
"	Alaska Mexican, g	200.000	1 0 0	0 4.5	May, 1900	7 6	1 2 6
Alaska Treadwell, g	"	1,000,000	5 0 0	1 6		4 17 6	5 2 6
Anaconda, c., g	Montana	6,000,000	5 0 0	8 2	Apr., 190	8 2 6	8 5 0
Do Lamar, g., s	Idaho	400,000	1 0 0	6	May, 1900	3 6	4 0
Golden Gate, g	California	80,000	1 0 0			1 6	2 0
Grand Central, g., s	Mexico	300,000	1 0 0	2 0	Jan., 197	12 6	15 0
Hall Mines, c., s	British Col	90,000	1 0 0	1 0	May, 1899	1 6	2 6
Le Roi, g	"	1,000,000	5 0 0	5 0	Nov., 1899	6 0 0	6 2 6
Lillie, g	Colorado	250,000	1 0 0	2½	Apr., 190		
Montana, g., s	Montana	660,000	1 0 0	6	Apr., 1899	8 1	4 0
Mountain Copper	Cal fornia	1,250,000	5 0 0	11 0	Apr., 1900	5 5 1	5 10 0
Newfoundland, c	Newfoundland	250,000	1 0 0			2 6	7 6
Palmarejo & Mexican g	Mexico	70,000	1 0 0			1 6	2 6
Stratton's Independence	Colorado	1,100,000	1 0 0	2 0	June, 1900	2 12 6	2 5 0
Chile	Chile	200,000	2 0 0	4 0	July, 1900	3 12 6	3 17 6
Frontino & Bolivia, g	Colombia	140,000	1 0 0	1 6	Oct., 1899	1 17 6	1 11 3
St. John del Rey, g	Brazil	60,000	1 0 0	1 6	June, 190	1 7 1	1 8 0
UtahCon., g	High'ndBoy	300,000	1 0 0	rts.	Mar., 1898	4 15	5 5 0
Velvet, g	BritishCol'mbia	100,000	1 0 0			1 0 0	1 2 6
Ymir, g	"	200,000	1 0 0	1 0	Nov., 1899	1 11	1 13 9
British Am. Corp	"	1,500,000	1 0 0	4 0	Mar., 190	13 9	14 3 9
Linares, l	Spain	45,000	3 0 0	15 0	Mar., 190	9 0 0	10 0 0
Mason & Barry, c., sul	Portugal	420,000	2 0 0	10 0	May, 1900	3 12 6	3 17 6
Rio Tinto, c	Spain	1,625,000	5 0 0	45 0	May, 1900	52 0 0	52 5 0
" pref	"	1,625,000	5 0 0	2 6	" 1900	5 0 0	5 1 0
Tharsis, c	"	1,250,000	2 0 0	15 0	Apr., 1900	7 7 6	8 2 6
Assoc. Gold Mines	W. Australia	500,000	1 0 0	1 6	Jan., 1900	3 5 0	3 12 6
Broken Hill Prop., s	N.S.Wales	384,000	8 0 0	1 0	Apr., 1900	2 8 6	2 9 6
Great Boulder Prop	W. Australia	175,000	1 0 0	6	Apr., 1900	1 11 6	1 12 6
Hannan's Brownhill, g	"	140,000	1 0 0	7 6	May, 1900	8 12 6	8 15 0
Ivanhoe Gold Corp	"	1,000,000	5 0 0	5 0	July, 1900	10 1. 6	10 5 0
Kalgurlie, g	"	120,000	1 0 0	rts	Oct., 1899	6 1 2	6 3 9
Lake View Consols, g	"	*250,000	1 0 0	5 0	Aug., 190	13 2 6	13 7 6
*Mt. Lyell M. & R., L., c	Tasmania	900,000	3 0 0	5 0	July, 190	7 12 6	7 17 6
*Mt Morgan, g	Queensland	1,000,000	1 0 0	7	June, 190	4 18 9	5 1 3
Wathi, g	New Zealand	320,000	1 0 0	2 6	June, 1900	9 6 3	9 18 9
Champion Reef, g	Colar Fields	225,000	10 0 0	4 0	May, 1900	5 13 9	5 6 3
*Mysore Gold, g	"	250,000	10 0 0	4 0	July, 1900	6 1 2	6 3 9
Nundydroog, g	"	242,000	1 0 0	2 0	July, 1900	3 6 3	3 8 9
Ooregum, g	"	145,000	1 0 0	3 6	Aug., 1900	3 15 0	3 17 6
" pref. g	"	120,000	1 0 0	3 6	1900	4 18 9	5 1 3
British S. Af., chartered	So. Africa	5,000,000	1 0 0	rts.	May, 1899	2 8 9	3 6 3
*Cape Copper, c	"	600,000	1 0 0	3 0	July, 1900	5 7 6	5 10 0
" pref	"	150,000	2 0 0	3 0	" 1900	4 17 6	5 2 6
City & Suburban (New), g	Transvaal	1,360,000	4 0 0	8 0	Aug., 1899	5 7 6	5 12 6
Con Deep Level, g	"	200,000	1 0 0	x all	June, 1898	1 5 0	1 10 0
Crown Reef, g	"	120,000	1 0 0	18 0	Nov., 1899	14 15 0	15 5 0
De Beers Con., d	Cape Colony	3,950,000	5 0 0	21	Sept., 1899	6 14 6	26 17 6
Ferreira, g	Transvaal	90,000	1 0 0	30 0	Aug., 1899	20 13 0	21 10 0
Geldenhuis Deep, g	"	350,000	1 0 0	8 0	Aug., 1899	9 5 0	9 15 0
Geldenhuis Est., g	"	200,000	1 0 0	10 0	Aug., 1899	6 7 6	6 12 6
Henry Nourse, g	"	125,000	1 0 0	10 0	Aug., 1899	8 10 0	8 15 0
Jagersfontein, d	Orange Fr. St.	1,000,000	5 0 0	6 0	Apr., 1900	6 0 0	6 10 0
Johannesburg Con. Invst.	So. Africa	2,750,000	1 0 0	2 0	Nov., 1899	2 0 0	2 2 6
Jubilee, g	Transvaal	50,000	1 0 0	5 0	Aug., 1899	5 10 0	6 0 0
Langlaagte Estate, g	"	470,000	1 0 0

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Author-ized Capital Stock.	Shares Issu'd No.	Shares Issu'd Par Val	Dividends. Paid, 1900.	Dividends. Total to Date.	Dividends. Latest. Date.	Dividends. Latest. Amt.
1	Acacia, g.	Colo..	$1,500,000	1,500,000	1	$15,000	$15,000	June. 1900	.01
2	Ætna Con., q.	Cal ..	500,000	100,000	$5	30,000	225,000	April 1900	.15
3	Alabama Coal & Iron, pf	Ala...	2,500,000	25,000	100	87,500	87,500	May.. 1900	1.75
4	Alaska-Mexican, g.	Alask	1,000,000	180,000	5	36,000	465,031	April. 1900	.10
5	Alaska-Treadwell, g.	Alask	5,000,000	200,000	25	150,000	4,370,000	April. 1900	.37½
6	Alice, g. s.	Mont.	10,000,000	400,000	25	.....	1,075,000	April. 1898	.05
7	Alliance, g.	Colo..	500,000	450,000	1	.....	31,500	Dec.. 1899	.07
8	Amalgamated, c.	Mont.	75,000,000	750,000	100	4,500,000	6,000,000	July.. 1900	2.00
9	Amanda, g.	Colo..	1,000,000	1,000,000	1	10,000	10,000	June. 1900	.01
10	Amazon, g.	Colo..	600,000	600,000	1	102,000	121,882	May.. 1900	.10
11	American Coal.	Md. ..	1,500,000	60,000	25	195,000	922,000	June. 1900	2.00
12	American Gold, g. s. c. l.	Colo..	3,000,000	300,000	10	.....	446,000	Dec.. 1899	.04
13	Amer. Sm & Ref., pref.	U. S..	32,500,000	325,000	100	1,832,650	2,401,425	July.. 1900	1.75
14	Am. Steel & Wire, pf.	U. S..	40,000,000	400,000	100	2,100,000	4,900,000	July.. 1900	1.75
15	Am. Steel & Wire, com.	U. S..	50,000,000	500,000	100	1,750,000	1,750,000	July.. 1900	1.75
16	Am. Zinc, Lead & Sm.	Mo...	2,500,000	60,000	25	60,000	180,000	Jan.. 1900	1.00
17	Anaconda Copper.	Mont.	30,000,000	1,200,000	25	2,400,000	14,550,000	April. 1900	2.00
18	Anchoria-Leland, g.	Colo..	600,000	600,000	1	.....	198,000	April. 1899	.03
19	Anglo-Mexican, g.	Mex..	2,001,625	400,230	5	.....	1,825,048	Dec.. 1899	.24
20	Apollo Con., g.	Alask	1,000,000	100,000	10	70,000	210,000	Jan.. 1900	.07
21	Apple Ellen, g.	Colo.	600,000	600,000	1	.....	25,000	Aug.. 1898	.01
22	April Fool, g.	Nev..	500,000	500,000	1	.....	16,000	Oct.. 1899	.01
23	Argentum-Juniata, g.	Colo..	1,300,000	650,000	2	.....	156,000	Oct.. 1895	.03
24	Argonaut, g.	Cal..	2,000,000	200,000	10	70,000	490,000	May.. 1900	.05
25	Arizona Copper.	Ariz..	3,190,550	.....	...	443,486	1,331,905	May.. 1900	.70
26	Associated, g.	Colo..	1,250,000	1,250,000	1	.....	84,000	Feb.. 1899	.01
27	Atlantic, c.	Mich.	1,000,000	40,000	25	80,000	860,000	Feb.. 1900	2.00
28	Bald Butte, g. s.	Mont.	250,000	250,000	1	.....	769,648	Dec.. 1899	.03
29	Bankok Cora Belle, s.	Colo..	600,000	600,000	1	.....	107,510	July.. 1896	.01
30	Battle Mtn. Con., g.	Colo..	2,500,000	2,500,000	1	.....	.....	.....	.....
31	Big Seven, g.	Cal ..	100,000	100,000	1	.....	6,000	April 1898	.03
32	Big Six, g. s.	Colo..	500,000	500,000	1	.....	15,000	May.. 1898	.00½
33	Boston-Aurora, pref.	Mo...	800,000	32,000	25	37,120	66,160	May.. 1900	.50
34	Boston & California.	Cal ..	600,000	600,000	1	.....	72,000	June. 1899	.06
35	Boston & Colo. Smelting	Colo..	750,000	15,000	50	33,750	303,750	July.. 1900	.75
36	Boston Duenweg, z.	Mo...	1,000,000	40,000	10	24,000	56,000	June.. 1900	.10
37	Boston Get There, z.	Mo...	250,000	22,500	10	9,000	20,250	April. 1900	.10
38	Boston-Little Circle, z.	Mo-K.	1,000,000	100,000	10	12,500	87,500	Mar .. 1900	.12½
39	Boston & Mont. Con.	Mont.	3,750,000	150,000	25	2,700,000	17,200,000	May.. 1900	10.00
40	Boston Providence, z., pf	Mo...	150,000	15,000	10	4,500	15,742	June. 1900	.05
41	Boston, q.	Cal..	1,000,000	100,000	10	10,000	20,000	Jan.. 1900	.10
42	Boston Springfield, z.	Mo...	500,000	20,000	25	15,000	15,000	June. 1900	.25
43	Boston Sunflower, z.	Mo...	150,000	15,000	10	.....	4,500	Oct.. 1899	.30
44	Breece, i.	Colo..	5,000,000	200,000	25	10,000	80,000	Feb.. 1900	.05
45	Buffalo Hump, g.	Idaho	3,000,000	300,000	10	155,000	155,000	July.. 1900	.10
46	Bullion-Beck & Champ.	Utah.	1,000,000	100,000	10	60,000	2,498,000	June. 1900	.10
47	Bunker Hill & Sullivan.	Idaho	3,000,000	300,000	10	147,000	948,000	July.. 1900	.07
48	Calumet & Hecla, c.	Mich.	2,500,000	100,000	25	3,000,000	69,850,000	June.. 1900	10.00
49	Cambria Steel.	Pa...	16,000,000	320,000	50	230,000	1,440,000	May.. 1900	.50
50	Cariboo-McKinney, g.	B.Col	800,000	800,000	1	.....	311,965	June. 1899	.01½
51	Centen l-Eureka, g.s.l.c.	Utah.	5,000,000	100,000	25	117,700	2,267,700	April. 1900	1.00
52	Center Creek, l. z.	Mo...	1,000,000	100,000	10	10,000	10,000	Feb.. 1900	.10
53	Central Lead, l.	Mo...	1,000,000	10,000	100	30,000	172,000	June. 1900	.50
54	Champion, g. s.	Cal...	340,000	34,000	10	.....	321,700	Nov . 1899	.25
55	Charleston, p. r.	S. C..	1,000,000	10,000	100	.....	200,000	June. 1899	2.00
56	Cloverdale, z.	Mo...	1,000,000	100,000	10	50,000	50,000	July.. 1900	.20
57	Colonial, l.	Mo...	1,000,000	1,000,000	1	.....	10,000	Aug.. 1899	.01
58	Colorado Smelting.	Mont.	1,000,000	100,000	10	.....	1,945,000	Jan .. 1899	1.00
59	Columbia, l.	Mo...	500,000	48,500	10	14,550	14,550	June. 1900	.10
60	Commodore, g.	Colo..	1,200,000	1,200,000	1	.....	432,000	Jan.. 1899	.04
61	Commonwealth, z., pref.	Mo ..	500,000	100,000	5	30,000	50,000	June. 1900	.05
62	Consolidated Gold Mines	Colo..	1,000,000	1 000 000	1	50,000	60,000	June. 1900	.02
63	Consolidation Coal.	Md...	10,250,000	102,500	100	205,000	5,921,650	Feb.. 1900	2.00
64	Con. Mercer Gold Mines.	Utah.	5,000,000	1,000,000	5	75,000	1,441,000	April. 1900	.12½
65	Cons. Zinc & Lead, pf.	Mo...	400,000	400,000	1	8,000	8,000	Jan.. 1900	.20
66	Continental, z.	Mo...	1,500,000	150,000	10	.....	.....	.....	.....
67	Cordell, z. l.	Mo...	300,000	60,000	5	18,000	21,000	June. 1900	.05
68	Cripple Creek Con., g.	Colo..	2,000,000	2,000,000	1	160,000	160,000	Mar.. 1900	.08
69	Crœsus, g.	Cal..	1,000,000	190,000	5	45,600	93,100	June. 1900	.06
70	Crowned King, g. s. l.	Ariz .	6,000,000	600,000	10	.....	242,700	May.. 1899	.02
71	Dalton & Lark, g. s. l.	Utah.	2,500,000	2,500,000	1	.....	87,500	Mar.. 1896	.00½
72	Daly, g.	Utah.	3,000,000	150,000	20	.....	2,925,000	Mar.. 1897	.25
73	Daly West, g.	Utah.	3,000,000	150,000	20	262,500	382,500	June. 1900	.25
74	Damon, g.	Colo..	2,000,000	2,000,000	1	.....	.....	.....	.....
75	Deadwood-Terra, g.	S. D..	5,000,000	200,000	25	.....	1,350,000	May.. 1898	.15
76	Deer Trail Con., g.	Wash	3,000,000	3,000,000	1	.....	55,000	Dec.. 1899	.00½
77	De Lamar, g. s.	Idaho	2,000,000	400,000	5	48,000	2,394,000	May . 1900	.12
78	Della S., g.	Colo..	1,000,000	1,000,000	1	.....	60,000	Jan .. 1897	.01
79	Delta, l. z.	Mo...	100,000	100,000	1	5,370	9,470	June. 1900	.01
80	Denver & Cripple C'k, g.	Colo..	1,000,000	1,000,000	1	10,625	10,625	June. 1900	.01⅝
81	Desloge Con., l.	Mo..	1,000,000	100,000	10	20,000	70,000	May.. 1900	.20
82	Dixie, g.	Utah.	125,000	125,000	1	10,000	10,000	April. 1900	.02
83	Doe Run, l.	Mo...	500,000	5,000	100	15,000	105,000	June. 1900	.50
84	Ducktown, c. i. sul. (ord).	Tenn.	374,000	7,480	50	.....	95,744	Dec.. 1899	9.60
85	Ducktown (founder).	Tenn.	1,000	200	5	.....	41,160	Dec.. 1899	162.00
86	Dutch, g.	Cal ..	1,500,000	130,000	10	.....	39,000	Feb.. 1898	.05
87	Eldorado, g.	Cal..	1,000,000	100,000	10	.....	10,000	July.. 1899	.10
88	Elkhorn, New, s. l.	Colo..	437,500	87,500	5	.....	1,325,000	June. 1898	.48
89	Elkton Con., g.	Colo..	3,000,000	2,500,000	1	158,750	873,961	June. 1900	.03
90	El Paso, g. s.	Colo..	900,000	900,000	1	.....	12,393	Jan.. 1898	.01
91	Empire State-Idaho.	Idaho	1,000,000	98,514	10	206,879	524 917	July.. 1900	.30
92	Enterprise, s. l.	Colo..	500,000	500,000	1	.....	900,000	Sept.. 1898	.05
93	Fanny Rawlings, g. s.	Colo..	1,000,000	1,000,000	1	.....	20,000	Aug.. 1899	.01
94	Favorite, g.	Colo..	1,200,000	1,200,000	1	48,000	48,000	April. 1900	.04
95	Federal Steel, pf.	U. S..	100000,000	532,610	100	4,127,727	5,725,587	July.. 1900	1.75
96	Federal Steel, com.	U. S..	100000,000	464,843	100	1,743,161	1,743,161	Mar.. 1900	2.50
97	Fern, g.	B.Col	200,000	200,000	1	.....	10,000	Jan .. 1898	.05
98	Ferris-Haggarty, c.g.s.	Wyo.	1,000,000	1,000,000	1	.....	5,000	Feb.. 1899	.00½
99	Florence, s.	Mont.	2,500,000	440,000	5	22,000	252,000	April. 1900	.05
100	Frisco Con., l. s.	Idaho	2,500,000	500,000	5	.....	920,000	Nov.. 1899	.25
101	Galena, s. l. g.	Utah.	1,000,000	100,000	10	.....	71,000	Sept. 1897	.05
102	Garfield Con., g.	Colo..	1,200,000	1,200,000	1	.....	34,000	May.. 1899	.01
103	Geyser-Marion, g.	Utah.	1,500,000	300,000	5	.....	96,000	Sept.. 1898	.02
104	Gold Coin of Victor, g.	Colo..	1,000,000	1,000,000	1	120,000	480,000	June. 1900	.02
105	Gold Deposit, g.	Colo..	500,000	500,000	1	10,000	10,000	Mar.. 1900	.02
106	Gold & Globe, g.	Colo .	750,000	750,000	1	.....	51,625	July.. 1898	.00½
107	Gold King, g.	Colo..	1,000,000	1,000,000	1	90,000	180,000	June. 1900	.03
108	Gold Sovereign, g.	Colo..	3,000,000	3,000,000	1	.....	.....	.....	.....
109	Golden Cycle, g.	Colo..	1,000,000	200,000	5	60,000	318,500	June. 1900	.05
110	Golden Eagle, g.	Colo..	500,000	500,000	1	5,000	25,000	June. 1900	.01
111	Golden Fleece, g. s.	Colo..	600,000	600,000	1	.....	569,480	Feb.. 1897	.01
112	Golden Reward, g.	S. D..	1,000,000	100,000	10	.....	155,000	Feb.. 1898	.15
113	Golden Star, g.	Ont..	1,200,000	1,200,000	1	.....	45,500	July.. 1899	.00½
114	Grafton, g.	Colo..	1,000,000	1,000,000	1	.....	10,000	Oct... 1899	.01
115	Grand Central, g.	Utah.	250,000	250,000	1	.....	666,250	Sept.. 1899	.24
116	Grand Gulch.	Ariz..	250,000	240,000	1	9,600	9,600	April. 1900	.01
117	Grass Valley Expl.	Cal...	100,000	30,000	2	37,500	67,500	May.. 1900	.25
118	Greater Gold Belt, g.	Col ..	5,000,000	3,800,000	1	76,000	76,000	June. 1900	.02
119	Gwin, g.	Cal .	1,000,000	100,000	10	5,000	91,500	May.. 1900	.25
120	Hall Mines, Ltd.	B. Col	1,500,000	250,000	5	.....	120,000	May.. 1899	.24
121	Hecla Con.	Mont	1,500,000	30,000	50	.....	2,190,000	Dec.. 1898	.50
122	Hidden Treasure, g.	Cal..	$500,000	360,000	$1	.....	$3,600	July.. 1899	.01
123	Holy Terror, g.	S. D..	500,000	500,000	1	$5,000	172,000	Jan.. 1900	.01
124	Home, g.	Colo..	50,000	50,000	1	75,000	75,000	June. 1900	.50
125	Homestake, g.	S. D..	21,000,000	210,000	100	630,000	8,773,750	June. 1900	.50
126	Horn-Silver, g. s. c. sp, l.	Utah.	10,000,000	400,000	25	20,000	5,270,000	June. 1900	.05
127	Idaho, g.	Idaho	1,000,000	1,000,000	1	8,188	8,188	April. 1900	.01
128	Idaho, s. l.	B.Col	500,000	500,000	1	.....	202,000	Jan.. 1899	.05
129	Independence Town & M	Colo..	1,250,000	1,250,000	1	50,000	50,000	June. 1900	.01
130	International, z.	Mo...	1,000,000	1,000,000	1	26,427	26,427	July . 1900	.01
131	Iowa, g. s. l.	Colo..	1,666,667	1,666,667	1	39,334	136,834	June. 1900	.00½
132	Iron Mountain, g. s. l. i.	Mont.	5,000,000	500,000	10	.....	507,500	April. 1898	.02
133	Iron Silver, s l.	Colo..	10,000,000	500,000	20	.....	2,500,000	April. 1889	.20
134	Isabella, g.	Colo..	2,250,000	2,250,000	1	135,000	675,000	June. 1900	.03
135	Jack Pot, g.	Colo..	1,250,000	1,250,000	1	.....	75,000	Dec.. 1899	.06
136	Jamison, g.	Cal ..	3,900,000	390,000	10	.....	50,700	April. 1899	.10
137	Keystone, g.	Colo..	1,500,000	1,500,000	1	.....	35,000	Mar.. 1894	.01½
138	Klondike Bonanza, Ltd.	Klond	750,000	52,750	5	.....	12,000	Aug .. 1899	.24
139	Lake Superior Iron.	Mich.	2,100,000	84,000	25	.....	2,132,000	Feb .. 1899	1.00
140	Last Chance, s. l.	B.Col	500,000	500,000	1	.....	45,000	Apr.. 1899	.05
141	Last Dollar, g.	Colo..	1,500,000	1,500,000	1	60,000	90,000	July.. 1900	.02
142	Le Roi, g.	B.Col	5,000,000	200,000	5	.....	1,305,000	Nov.. 1899	1.20
143	Lexington, g.	Colo..	1,500,000	1,500,000	1	.....	.....	.....	.....
144	Lillie, g.	Colo..	1,250,000	250,000	5	45,117	349,300	April. 1900	.05
145	Little Tiger, g.	Cal...	500,000	500,000	1	15,000	47,500	Feb.. 1900	.01½
146	Mammoth, g. s. c.	Utah.	10,000,000	400,000	25	120,000	1,730,000	July.. 1900	.05
147	Marion Con., g.	Colo..	5,000,000	500,000	10	.....	300,000	May.. 1899	.01
148	Mary McKinney, g.	Colo..	1,000,000	1,000,000	1	90,000	120,000	April. 1900	.06
149	Maryland Coal, pf.	Md...	1,885,005	18,850	100	37,700	584,319	June. 1900	2.00
150	Matoa, g.	Colo..	1,000,000	1,000,000	1	.....	25,000	Dec. 1898	.02½
151	Missouri Zinc Fields, pf.	Mo...	400,000	16,000	25	16,573	31,885	April. 1900	.76
152	Modoc, g. s.	Colo..	500,000	500,000	1	30,000	175,000	June . 1900	.01
153	Mollie Gibson, s. l.	Colo..	5,000,000	1,000,000	5	.....	4,080,000	Jan .. 1895	.05
154	Monarch, g.	Colo..	1,000,000	1,000,000	1	120,000	120,000	April. 1900	.12
155	Montana Coal & Coke.	Mont.	5,000 000	200 000	25	60,000	60,000	April. 1900	.30
156	Montana, Ltd., g. s.	Mont.	3,300,000	657,128	5	.....	453,700	April. 1899	.12
157	Montana Ore Purchas'g.	Mont.	2,500,000	80,000	25	160,000	1,520,000	May.. 1900	1.00
158	Montreal, g.	Colo..	1,000,000	1,000,000	1	.....	7,500	Nov.. 1898	.00¾
159	Monument, g.	Colo..	300,000	300,000	1	.....	18,124	Nov.. 1899	.01
160	Moon-Anchor Con., g.	Colo..	1,750,000	600,000	1	.....	261,000	Nov.. 1898	.07½
161	Moose, g.	Colo..	600,000	600,000	1	.....	186,000	Feb.. 1896	.01
162	Morning Star Drift, g.	Cal...	240,000	2,400	100	.....	847,200	Nov.. 1899	10.00
163	Morse, g.	Colo..	1,250,000	1,250,000	1	.....	215,650	May.. 1899	.12
164	Mountain Beauty, g.	Colo..	2,000,000	2,000,000	1	.....	.....	.....	.....
165	Mountain Copper.	Cal ..	6,250,000	250,000	25	660,000	1,833,750	April. 1900	2.64
166	Mt. Rosa, g.	Colo..	1,000,000	1,000,000	1	.....	75,000	Dec.. 1899	.04
167	Mt. Shasta, g.	Cal...	100,000	20,000	5	.....	6,000	May.. 1899	.30
168	Moulton, g.	Mont.	2,000,000	400,000	5	.....	500,000	Oct... 1899	.05
169	Napa Con., q.	Cal ..	700,000	100,000	7	50,000	1,090,000	July.. 1900	.10
170	National Lead, com.	U. S..	15,000,000	149,054	100	149,054	1,341,486	Mar.. 1900	1.00
171	National Lead, pf.	U. S..	15,000,000	149,040	100	521,640	10,057,640	June. 1900	1.75
172	New Central Coal.	Md...	1,000,000	50,000	20	20,000	490,000	April. 1900	.40
173	New Idria, q.	Cal...	500,000	100,000	5	60,000	230,000	July.. 1900	.20
174	N. J. & Mo., z.	Mo...	250,000	2,500	100	6,000	6,000	May.. 1900	2.00
175	New York, Zinc.	Mo...	700,000	28,000	25	.....	6,500	Oct... 1899	.25
176	N. Y. & Hon Rosario, s. g.	C. A..	1,500,000	150,000	10	90,000	1,952,000	June. 1900	.10
177	North Star Mines.	Cal ..	5,000,000	250,000	10	.....	50,000	Nov.. 1899	.20
178	Nugget, g.	Colo..	625,000	1,250,000	½	.....	35,000	Aug . 1898	.00½
179	Okanogan, g.	Wash	62,500	1,250,000	5	.....	3,125	Oct... 1899	.00¼
180	Old Colony Zinc & Sm.	Mo...	1,100,000	68,329	10	33,332	33,332	April. 1900	.25
181	Omega, g.	Colo..	1,500,000	1,212,550	1	18,188	18,188	June. 1900	.01½
182	Ontario, s. l.	Utah.	15,000,000	150,000	100	90,000	13,662,500	April. 1900	.30
183	Orphan Belle, g.	Colo..	1,000,000	1,000,000	1	.....	197,899	Dec.. 1899	.09
184	Original Empire, g.	Cal...	5,000,000	50,000	100	.....	530,000	Oct... 1899	1.00
185	Osceola, c.	Mich.	2,500,000	93,000	25	279 000	3,359,500	June. 1900	3.00
186	Parrot, c.	Mont.	2,300,000	229,850	10	1,034,325	4,049,059	July.. 1900	1.50
187	Pennsylvania Coal.	Pa....	5,000,000	190,000	50	.....	4,050,000	May.. 1899	8.00
188	Pennsylvania Con, g.	Cal...	5,150,000	51,500	100	25,750	161,325	May.. 1900	.10
189	Pennsylvania Steel, pf.	Pa.. ..	1,500,000	15,000	100	52,500	78,750	July.. 1900	1.75
190	Petro, g.	Utah.	1,000,000	200,000	5	.....	32,000	Oct... 1899	.02½
191	Pharmacist Con., g.	Colo..	1,500,000	1,500,000	1	.....	84,000	Jan.. 1898	.01
192	Pinnacle, g.	Colo..	2,000,000	2,000,000	1	.....	.....	.....	.....
193	Pioneer, g.	Cal...	1,000,000	100,000	10	.....	62,500	Mar.. 1899	.12½
194	Pittsburg Coal, pf.	Pa. ..	32,000,000	308,000	100	1,078,000	1,078,000	April. 1900	1.75
195	Plumas Eureka, g.	Cal ..	1,406 250	140,625	10	84,375	2,797,544	April. 1900	.60
196	Portland, g.	Colo..	3,000,000	3,000,000	1	390,000	2,947,080	June. 1900	.02
197	Princess, g.	Colo..	1,000,000	1,000,000	1	.....	45,000	May . 1896	.01
198	Prince Albert, g.	Colo..	3,000,000	3,000,000	1	.....	.....	.....	.....
199	Queen Bess Propr., s. l.	B.Col	500,000	100,000	5	.....	25,000	July.. 1899	.12½
200	Quicksilver, pref.	Cal...	4,300,000	43,000	100	21,500	1,866,911	July.. 1900	.50
201	Quincy, c.	Mich.	2,500,000	100,000	25	500,000	11,570,000	Feb.. 1900	5.00
202	Rambler & Cariboo, s. l.	B.Col	1,250,000	1,250,000	1	33,750	105,000	Mar.. 1900	.01
203	Reco, s. l.	B.Col	1,000,000	1,000,000	1	.....	297,500	Jan.. 1898	.10
204	Republic Con., g.	Wash	3,500,000	3,500,000	1	105,000	382,500	Mar.. 1900	.01
205	Republic Iron & Steel, pf	U. S..	25,000,000	212,570	100	743,994	1,587,989	July.. 1900	1.75
206	Reward, g.	Cal ..	1,000,000	100,000	10	.....	20,000	Aug . 1899	.20
207	Russell-Irwin, z.	Mo...	250,000	25,000	10	.....	15,000	Oct... 1899	.10
208	Sacramento, g.	Utah.	5,000,000	1,000,000	5	.....	138,000	Oct... 1899	.00½
209	St. Joseph, l.	Mo...	3,000,000	300,000	10	75,000	2,972,000	June. 1900	.50
210	Seventy-Six, g. s.	Colo..	1,000,000	200,000	5	.....	2,950	Mar.. 1898	.01
211	Santa Rosalia, g.s.	Cal..	100,000	100,000	1	.....	135,000	Sept.. 1899	.05
212	Silver King, g. s. l.	Utah.	300,000	150,000	20	450,000	2,900,000	June. 1900	.50
213	Small Hopes, s.	Colo..	5,000 000	250,000	20	.....	3,325,000	Feb.. 1899	.10
214	Smuggler, s. l. z.	Colo..	1,000,000	1,000,000	1	330,000	1,515,000	June. 1900	.03
215	South Eureka, g.	Cal ..	1,500,000	300,000	5	.....	12,000	May.. 1898	.04
216	South Swansea, s. l.	Utah.	150,000	150,000	1	.....	165,000	Oct... 1899	.05
217	Specimen, g.	Colo,.	1,200,000	1,200,000	1	.....	.....	.....	.....
218	Squaw Mountain, g.	Colo..	2,000,000	2,000,000	1	.....	10,000	Nov.. 1899	.00¼
219	Standard Con., g. s.	Cal...	2,000,000	200,000	10	40,000	3,939,226	May.. 1900	.10
220	Standard, g.	Idaho	500,000	500,000	1	.....	1,745,000	April. 1899	.06
221	Stratton's Independ'ce.	Colo..	5,500,000	1,000,000	5	960,000	1,920,000	June. 1900	.48
222	Strong, g.	Colo..	2,500,000	2,500,000	1	150,000	1,000,000	June. 1900	.01
223	Swansea, s. l.	Utah.	500,000	100,000	5	40,000	241,500	June. 1900	.05
224	Tamarack, c.	Mich.	1,500,000	60,000	25	300,000	6,570,000	June. 1900	7.00
225	Tomboy, g.	Colo..	1,500,000	300,000	5	72,000	884,000	June. 1900	.24
226	Touraine, g.	Colo..	1,250,000	1,250,000	1	87,500	87,500	April. 1900	.07
227	Union, g.	Colo..	1,250,000	1,250,000	1	.....	82,744	June. 1896	.01
228	Union Leasing.	Colo..	1,000,000	1,000,000	1	.....	336,000	July.. 1895	.04
229	Union, z. l.	Kas..	500,000	500,000	1	5,000	5,000	June.. 1900	.01
230	United, z. l., pref.	Mo...	6,000,000	240,000	25	12,729	15,395	April. 1900	.50
231	United Verde, c.	Ariz..	3,000,000	300,000	10	975,000	1,837,500	June. 1900	.75
232	Utah, g.	Utah.	1,000,000	100,000	10	.....	179,000	Jan... 1899	.02
233	Victor, g.	Colo..	1,000,000	200,000	5	.....	1,155,000	Dec. . 1898	.50
234	Vindicator, Con., g.	Colo..	1,500,000	1,065,000	1	106,500	411,000	April. 1900	.05
235	War Eagle Con., g. s. c.	B. C..	2,000,000	1,750,000	1	52,500	545,250	Feb.. 1900	.01½
236	What Cheer, z.	Mo...	225,000	22,500	10	9,000	11,250	May.. 1900	.20
237	Wolverine, c.	Mich.	1,500,000	60,000	25	120,000	390,000	April. 1900	2.00
238	Work, g.	Colo..	1,500,000	1,500,000	1	.....	.....	.....	.....
239	Yellow Aster, g.	Cal...	1,000,000	100,000	10	100,000	419,416	July.. 1900	.20
240	Ymir, g.	B.Col	1,000,000	125,000	5	.....	30,000	Nov.. 1899	.24
241	Zenobia, g.	Colo..	1,000,000	1,000,000	1	.....	10,000	Feb.. 1898	.01

G., Gold. S., Silver. L., Lead. C., Copper. Z., Zinc. Q., Quicksilver. I., Iron. This table is corrected up to July 2d. Correspondents are requested to forward changes or additions.

CHEMICALS, MINERALS, RARE ELEMENTS, ETC.—CURRENT PRICES.

	Cust. Meas.	Price.
Abrasives—		
Carborundum, f.o.b. Niagara Falls, Powd., F. FF. FFF	lb.	$0.10
Minute No. 1	"	.15
No. 15	"	1.00
Corundum, N. C.	"	.07@.10
Chester, Mass.	"	.04½@.05
Crushed Steel, f. o. b. Pittsburg	"	.05½
Emery, Turkish flour, in kegs	"	.03
Grains, in kegs	"	.04½@.05
Naxos flour, in kegs	"	.03
Grains, in kegs	"	.05
Chester flour, in kegs.	"	.03
Grains, in kegs	"	.04½@.05
Peekskill flour, in kegs	"	.01¾
Grains, in kegs.	"	.02½
Crude, ex-ship, N. Y.:		
Kuluk (Turkey)	lg. ton	22.00@24.00
Abbott (Turkey)	"	26.50@30.00
Naxos (Greek) h. gr.	"	32.00
Pumice Stone, Am. powd.	lb.	.01@.02
Italian, powdered	"	.01½
Lump, per quality	"	.04@.40
Rottenstone, ground	"	.02½@.03
Lump, per quality	"	.05@.14
Rouge, per quality	"	.10@.30
Steel Emery, f.o.b. Pittsburg	"	.07
Acids—Acetic, 30% pure	100 lbs.	3.50
30% ch. pure	"	6.00
80% pure	"	7.50
Benzoic, English	oz.	.12½
German	lb.	.46
Boracic, cryst.	"	.11
Powdered	"	.11½
Carbolic, crude, 60%	gal.	.35
Cryst, 35%, drums	lb.	.20
Liquid, 95%	gal.	.45
Carbonic, liquid gas	lb.	.12½
Chromic, crude	"	.20
Chem. pure	"	.50
Hydrochloric, ch. pure.	"	.07
Hydrofluoric, 36%	"	.03
48%	"	.05
Best	"	.25
Nitric, chem. pure	"	.09
Sulphuric, chem. pure	"	.07
Sulphurous, liquid anhy.	"	.08
Tartaric, cryst.	"	.32
Powder	"	.32½
Alcohol—Grain	gal.	2.37
Refined wood, 95@97%	"	.75@.80
Purified	"	1.20
Alum—Lump	100 lbs.	1.75
Ground	"	1.85
Powdered	"	3.00
Chrome, com'l	"	2.75@3.00
Aluminum—Nitrate	lb.	1.50
Oxide, com'l, common	"	.06½
Best	"	.20
Pure	"	.80
Hydrated	100 lbs.	2.60
Sulphate, pure	"	1.50@1.75
Com'l	"	1.15@1.30
Ammonia—Aqua, 16°	lb.	.03
18°	"	.03¼
20°	"	.03¾
26°	"	.05½
Ammonium—		
Bromide, pure	"	.52@.53
Carbonate lump	"	.08¼@.08½
Powdered	"	.09¼@.09½
Muriate, gran.	"	.06¼
Lump	"	.09¼
Nitrate, white, pure (99%)	"	.10½
Phosphate, com'l	"	.12
Chem. pure	"	60
Antimony—Glass	"	.30@.40
Needle, lump	"	.05½@.06
Powdered, ordinary	"	.05¾
Best	"	.08½
Oxide, com'l white, 95%	"	.09¼
Com'l white, 99%	"	.12
Com'l gray	"	.07
Sulphuret, com'l	"	.16
Arsenic—White	"	.04⅝
Red	"	.07¼@.07¾
Asphaltum—		
Ventura, Cal.	sh. ton	32.00
Cuban	lb.	.01½@.03¼
Egyptian, crude	"	.05½@.66
Trinidad, refined	lg. ton	30.00@35.00
San Valentino	"	15.00
Seyssel (French) mastic.	sh. ton	21.00
Gilsonite, Utah, ordinary	lb.	.03
Select	"	.03¾
Barium—Carbonate, Lump, 80@90%	sh. ton	25.00@27.50
92@98%	"	26.00@29.00
Powdered, 80@90%	lb.	.01¾@.02
Chloride, com'l	"	.02@.02½
Chem. pure cryst	"	.05
Nitrate, powdered	"	.06
Oxide, com'l, hyd. cryst	"	.18
Hydrated, pure cryst.	"	.25
Pure, powd.	"	.27
Sulphate	"	.01
Barytes—Am. Cr., No. 1.	sh. ton	9.00
Crude, No. 2	"	8.00
Crude, No. 3	"	7.75
Am. Floated	"	14.50@17.50
German, gray	"	14.50
Snow white	"	17.50
Bauxite—Ga. mines: 1st grade	lg. ton.	5.00@5.10
Second grade	"	4.25@4.50
Ala., f.o.b., 1st grade	"	5.00
Second grade	"	3.85
Bismuth—Oxide, hydr.	lb	2.25@2.30
Subnitrate	"	1.30@1.35
Bitumen, "B"	"	.03½
"A"	"	.05
"A" and "B"	"	.04½
Bone Ash	"	02¾@.03½
Borax	lb.	$.07¼@.07½
Bromine—Bulk	"	.45
Cadmium—Metallic	"	1.40
Acetate, pure white	100 lbs.	1.00
Sulphate	"	2.00@2.50
Calcium—Acetate, gray.	"	1.55
" brown	"	1.05
Carbide, ton lots, f. o. b. Niagara Falls, N. Y.	sh. ton	75.00
Carbonate, ppt.	lb.	.05
Chloride, com'l	100 lbs.	.90
Best	"	1.00
Sulphite	lb.	.05
Cement—		
Portland, Am., 400 lbs.	bbl.	1.50@2.00
Belgium	"	1.95@2.20
English	"	2.45@2.55
German	"	2.30@2.70
"Rosendale," 300 lbs.	"	.95
Sand cement, 400 lbs.	"	1.55@1.95
Slag cement, imported.	"	1.65
Ceresine—		
Orange and Yellow	lb.	.11½
White	"	.13½
Chalk—Lump, bulk	sh. ton	2.15
Ppt. per quality	lb.	.04¼@.06½
Chlorine—Liquid	"	.28
Water	"	.15
Chrome Ore—		
(50% chrome) ex ship	lg. ton	23.00
Sand	"	35.00
Bricks, f.o.b., Pittsburg.	M	175.00
Clay, China—Am. com., ex-dock, N. Y.	lg ton	8.00
Am. best, ex-dock, N. Y.	"	9.00
English, common	"	12.00
Best grade	"	17.00
Fire Clay, ord.	sh. ton	4.00
Best	"	5.75
Slip Clay	"	4.00
Coal Tar Pitch	gal.	.08
Cobalt—Carbonate	lb.	1.75
Nitrate	"	1.50
Oxide—Black	"	2.26@2.36
Gray	"	2.28@2.40
Smalt, blue ordinary	"	.25
Best	"	.30
Copperas	100 lbs.	72½
Copper—Carbonate	lb.	.18
Chloride	"	.25
Nitrate, crystals	"	.35
Oxide, com'l	"	.19
Cream of Tartar—Crys.	"	.22½
Granulated	"	.22½
Powdered	"	.23½
Cryolite	"	.06½
Explosives—		
Blasting powder, A. 25 lb. keg		2.50
Blasting powder, B.	"	1.25
"Rackarock," A	lb.	.25
"Rackarock," B	"	.18
Judson R.R. powder	"	.10
Dynamite (20% nitro-glycerine)	"	.13
(30% nitro-glycerine)	"	.14
(40% nitro-glycerine)	"	.15
(50% nitro-glycerine)	"	.16½
(60% nitro-glycerine)	"	.18
(75% nitro-glycerine)	"	.21
Glycerine for nitro (32 2-10° Be.)	"	.13¼
Feldspar—Ground	sh. ton	8.00@9.00
Fluorspar—In bulk.		
Am. lump, 1st grade	"	12.40
2d grade	"	11.90
Gravel & crushed, 1st g	"	11.40
2d grade	"	10.90
Ground, 1st grade	"	15.90
Foreign, lump	"	8.00@12.00
Ground	"	11.50@14.00
Fuller's Earth—Lump.	100 lbs.	.75
Powdered	"	.85
Refined lump	"	1.25
Graphite—		
Am. lump, f. o. b. Providence, R. I.	sh. ton	8.00
Am. pulv., f. o. b. Providence, R. I.	"	30.00
German, lump	lb.	.01½
Pulverized	"	.01¾@.02
Ceylon, common	"	.04
Pulverized	"	.05@.08
Italian, pulv	"	.01½
Gypsum—Ground	sh. ton	8.00@8.50
Fertilizer	"	7.00
Rock	lg. ton	4.00
English and French	"	14.00@16.00
Infusorial Earth—Ground.		
American, best	"	20.00
French	"	37.50
German	"	40.00
Iodine—Crude	100 lbs.	2.45
Iron—Muriate	lb.	.05
Nitrate, com'l	"	.01½
True	"	.03½
Oxide, pure copperas col	"	.05@.10
Purple-brown	"	.02
Venetian red	"	.01@.01½
Scale	"	.01@.03
Kaolin—(See Clay, China).		
Kryolith—(See Cryolite.)		
Lead—Acetate, white	lb.	.07
Com'l, broken	"	.06½
Brown	"	.05½
Nitrate, com'l	"	.06½
" gran	"	.8½
Lime—Com., ab. 250 lbs	bbl.	.60
Finishing	"	.70
Magnesite—		
Crude, lump (95%) Greece	lg. ton	7.00@7.50
Calcined (Greece)	sh. ton	17.50
Bricks (Greece)	M.	170.00
Bricks, Am., f.o.b. Pittsburg	M.	175.00
Magnesium—		
Carbonate, light, fine pd	lb.	.03¾
Magnesium—Carb. Blocks	lb.	$0.06@.09
Chloride, com'l	"	.01¾
Fused	"	.20
Nitrate	"	.60
Sulphate	"	.01@.01¼
Manganese—Crude-pow'd 73@75% binoxide	"	.01¼@.01½
Crude, pow'd 75@85% binoxide	"	.01½@.02½
85@90% binoxide	"	.02½@.03¼
90@95% binoxide	"	.02¾@.05½
Carbonate	"	.16@.20
Chloride	"	.04
Ore, 50%, Foreign	unit	.29
Domestic	"	.30
Marble—Flour	sh. ton	5.50@6.00
Mercury—Bichloride	lb.	.74
Mica—N. Y. gr'nd, coarse	"	.04@.05
Fine	"	.05@.06
Sheets, N. C., 2x4 in	"	.30
3x3 in	"	.80
3x4 in	"	1.50
4x4 in	"	2.00
6x6 in	"	3.00
Scrap, f.o.b., Dillsboro, N. C.	sh. ton.	25.00
Mineral Wool—		
Slag, ordinary	sh. ton	20.00
Selected	"	25.00
Rock, ordinary	"	32.00
Selected	"	40.00
Monazite—92%	"	140.00
Nickel—Oxide, No. 1	lb.	1.00
No. 2	"	.60
Sulphate	"	.20@.21
Oils—Black, reduced 29 gr.: 25@30 cold test	gal.	.09¾@.10¼
15, cold test	"	.10¾@.11¼
Zero	"	.11¾@.12¾
Summer	"	.09¼@.09¾
Cylinder, dark steam ref	"	.08¾@.10¼
Dark filtered	"	.11¾@.16¼
Light filtered	"	.14¾@.17¾
Extra cold test	"	.21¾@.26¼
Gasolene, 86°@90°	"	.16@.21
Naphtha, crude 68@72°	"	9.55
"Stove"	"	.12
Linseed, domestic raw	"	.65@.67
Boiled	"	.69
Calcutta, raw	"	.76
Graphite, lubricating, Am. dry	lb	.10
In oil	"	.12
Axle grease	"	.08½@.10
Wood grease	"	.05@.06
Ozokerite—Foreign	"	.09¼
Paints and Colors—		
Benzine, Sumatra	"	.35
Marbled	"	.27
Chrome green, common	"	.05
Extra	"	.12@.15
Best	"	.37
Yellow, common	"	.10
Best	"	.25
Silica Graphite, thick	"	.12
Thinned	gal.	1.15
Lampblack, com'l	lb.	.03
Refined	"	.08
Calcined	"	.12@.20
Fine spirit	"	20@.35
Litharge, Am. powd.	"	.06½
English flake	"	.09½
Glassmakers, Foreign	"	.06½
Metallic, brown	sh. ton	19.00
Red	"	16.00
Ocher, Am. common	"	9.25@10.00
Best	"	21.25@25.00
Dutch, washed	lb.	.04¾
French, washed	"	.01¾@.02½
Orange mineral, Am.	"	.08¾@.08½
Foreign, as to make	"	.09½@.11¼
Paris green, pure, bulk.	"	.12
Red lead, American	"	.06½
Foreign	"	.08¾
Shellac, "D. C."	"	.28
Native	"	.15
Turpentine, spirits	gal.	.46@.46½
Ultramarine, best	lb.	.25
Vermilion, Amer. lead.	"	.10@.11
Quicksilver, bulk	"	.72
Chinese	"	.85
English, imported	"	.80
English, domestic	"	.74
White lead, Am., dry	"	.05¾
In oil	"	.06½
English	"	.06½@.08¾
Whiting, common	100 lbs.	.40
Gilders	"	.54
Zinc white, Am., ex. dry	lb.	.04¾@.05¼
American, red seal	"	.07¼@.07¾
Green seal	"	.07¾@.08
Foreign, red seal, dry	"	.06¼@.06¾
Green seal, dry	"	.06¾@.06⅝
Foreign, in oil	"	.10¾@.11¾
Potash—Caustic, ord.	"	.04½@.05
Elect. (90%)	"	.06½
Potassium—		
Bicarbonate cryst.	"	.07¾
Powdered or gran.	"	.12
Bichromate, Am.	"	.08¾
Scotch	"	.09½
Carbonate, hydrated	"	.04¼
Calcined	"	.04
Chromate	"	.35
Cyanide (98@99%)	"	.28@.29
Iodide, bulk	"	2.30
Permanganate, pure cr.	"	.14
Prussiate, yellow	"	.18½@.19
Red	"	.37
Silicate	"	.06
Sulphide, com'l	"	.10
Quartz—(See Silica).		
Rosin—		
Com. strained (280 lbs.)	bbl.	1.55
Best strained	"	3.00
Medium	"	1.75
Salt—		
N. Y. com, fine	sh. ton	$2.00
N. Y. agricultural	"	1.50
Saltpeter—Crude	100 lbs.	3.50
Refined	"	4.25
Silica—Best foreign	lg. ton	10.00@11.00
Ground quartz, ord.	sh. ton	6.00@8.00
Best	"	12.00@13.00
Lump quartz	"	2.50@4.00
Glass sand	"	2.75
Silver—Chloride	oz.	.65
Nitrate	"	.40
Oxide	"	.85@1.10
Slate—Ground, black	sh. ton	7.50@8.75
Ground, red and olive.	"	20.00
Sodium—Acetate, com'l.	lb.	.04¾
Bicarbonate	"	.06½
Chlorate, com'l	"	.09¼@.09½
Hyposulphite, Am.	100 lbs.	1.70@1.80
German	"	2.10@2.20
Nitrite, 96@98%	lb.	.08
Peroxide	"	.45
Phosphate	"	.02¼
Prussiate	"	.14¼
Silicate, conc.	"	.05
com'l	"	.02¼
Sulphate, gran., puri'd.	"	.03
Sulphide	"	.01¾
Sulphite	"	.02½
Tungstate, com'l	"	.35
Pure	"	.50
Strontium—Nitrate	"	.09
Sulphur—Roll	100 lbs.	1.75
Flour	"	1.85
Flowers, sublimed	"	2.05
Talc—N. C., 1st grade	sh. ton	13.75
N. Y., Fibrous	"	8.00@9.00
French, best	100 lbs.	1.25
Italian, best	"	1.75
Tin—Bichloride	lb.	.09½@.10
Crystals	"	.20
Muriate, 36°	"	.09
52°	"	.15
Oxide, white, ch. pure	"	.41
Uranium—Oxide	"	2.25@3.00
Zinc—Metallic, ch. pure	"	07¼@.09½
Carbonate	"	.15
Chloride	"	.05
Dust	"	.07¼
Sulphate	"	.02@.02½

THE RARE ELEMENTS.

Prices given are at makers' works in Germany, unless otherwise noted.

	Cust. Meas.	Price.
Barium—Amalgam	grm.	$1.19
Electrol	"	5.71
Beryllium—Powder	"	5.95
Crystals	"	9.04
Nitrate (N. Y.)	oz.	2.00
Boron—Amorphous, pure	grm.	.19
Crystals, pure	"	1.43
Nitrate (N. Y.)	lb.	1.50
Cadmium	kg.	1.90
Calcium	grm.	4.28@5.95
Cerium—Fused	grm.	1.02
Nitrate (N. Y.)	lb.	17.00
Chromium—Fused, Elect.	kg.	5.95
Pure powder 95%	"	1.79
Chem. pure cryst	grm.	.26
Cobalt—(98@99%)	kg.	6.31@7.85
Pure	"	30.94
Didymium—Nitrate (N. Y.)	oz.	3.00
Erbium	grm.	3.09
Nitrate (N. Y.)	oz.	3.00
Germanium—Powder	grm.	33.32
Fused	"	35.70
Glucinum—Powder	"	5.95
Crystals	"	9.04
Nitrate (N. Y.)	oz.	2.75
Indium	grm	4.05
Iridium—	"	1.43
Lanthanum—Powder	"	4.28
Electrol, in globules	"	9.04
Nitrate (N. Y.)	oz.	2.75
Lithium	grm.	2.38
Nitrate (N. Y.)	oz.	.60
Magnesium—In bars	kg.	6.19
In wire	"	9.99
Powdered	"	5.71@6.90
Molybdenum—Fused	grm.	.20
Powder, 95%	kg.	2.62
Niobium	grm.	3.81
Osmium	"	.95
Palladium—Wire	"	.95
Sponge	"	.71
Potassium—In balls	kg.	17.85
Rhodium	grm.	2.02
Rubidium—Pure	"	4.76
Ruthenium—Powder	"	2.38
Rutile—Crude	kg.	.43
Selenium—Com'l powder	"	33.32
Sublimed powder	"	42.84
Sticks	"	35.70
Silicium—Com'l	"	28.56
Pure crystals	"	59.50
Sodium (N. Y.)	lb.	.65
Strontium—Electrol	grm.	6.19
Tantalium—Pure	"	3.57
Tellurium—Ch. p. sticks.	kg.	119.00
Powder	"	95.20
Thallium	"	26.18
Thorium—Metallic	grm.	7.85
Nitrate 49@50% (N. Y.)	lb.	5.00
Titanium	kg	47.60
Uranium	"	190.40
Nitrate (N. Y.)	oz.	.25
Vanadium—Fused	grm.	1.19
Wolfram—Fused, elect.	kg.	238.00
Powder, 95@98%	"	1.67
Purest, powder	"	6.43
Yttrium	grm.	3.33
Nitrate (N. Y.)	oz.	3.00
Zirconium—Com'l	kg.	119.00
Nitrate (N. Y.)	lb.	9.50

NOTE.—These quotations are for wholesale lots in New York unless otherwise specified, and are generally subject to the usual trade discounts. This table is revised up to June 9. Readers of the ENGINEERING AND MINING JOURNAL are requested to report any corrections needed, or to suggest additions which they may consider advisable. See also Market Reviews.